JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER VHS

PAL SECAM NTSC

HR-D337MS

HQ

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VHS INDEX SEARCH SYSTEM

MULTIPLE SYSTEM

JVC
VHS
HQ
12:00 8

SPECIFICATIONS

Format : VHS standard
Recording system : Rotary, two-head helical scan system with slant double-azimuth combination video heads
Video signal system : PAL and SECAM colour and CCIR monochrome signals, 625 lines
: NTSC colour and EIA monochrome signals, 525 lines
Tape width : 12.65 mm
Maximum recording time
(SP) : 240 min. with E-240 video cassette (PAL/SECAM)
: 160 min. with T-160 video cassette (NTSC)
(LP) : 480 min. with E-240 video cassette (PAL/SECAM)
(EP) : 480 min. wtih T-160 video cassette (NTSC)
Temperature
Operating : 5°C to 40°C
Storage : -20°C to 60°C
Aerial input
(Europe ch) : VHF ch E2 – E4
ch E5 – E12, S1 – S20
UHF ch E21 – E69
(USA ch) : VHF ch 2 – 6, 7 – 13
UHF ch 14 – 79
CABLE ch A – I, J – W
(JAPAN ch) : VHF ch 1 – 2, 3 – 12
UHF ch 13 – 62
Aerial output : K, I, G, M modulation
PAL : UHF 32 – 40 adjustable (preset E36 ch)
NTSC (USA) : UHF 29 – 39 adjustable (preset 34 ch)
NTSC (JAPAN) : UHF 28 – 38 adjustable (preset 33 ch)
Power consumption : 33 watts
Power requirement : AC110 – 240 V, 50/60 Hz

Video
Input : 0.5 to 2.0 Vp-p 75 ohms, unbalanced
Output : 1.0 Vp-p, 75 ohms, unbalanced
Signal-to-noise ratio : 43 dB (PAL/SECAM), 45 dB (NTSC), (Rohde & Schwarz noise meter) with PICTURE SHARPNESS control at centre position
Horizontal resolution : More than 240 lines (PAL/SECAM), 220 lines (NTSC) with PICTURE SHARPNESS control at centre position

Audio
Input : Line: -8 dBs, 50 k-ohms, unbalanced
Output level : -6 dBs, high impedance load
Output impedance : Less than 1 k-ohm unbalanced
Signal-to-noise ratio : More than 40 dB
Frequency range : 70 Hz to 10,000 Hz
Timer : 14-day/4-programme timer
Dimensions : 435 mm(W) x 95 mm(H) x 374 mm(D)
Weight : 6.9 kg
Provided accessories : Aerial cable,
Infrared remote control unit,
"UM-4" battery x 2,
Plug adapter

Specifications shown are for SP mode unless otherwise specified.
Design and Specifications subject to change without notice.

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No. 82051
May 1988

NOTE: For a technical description, please refer to Technical Guide VTG82025 HR-D337MS.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

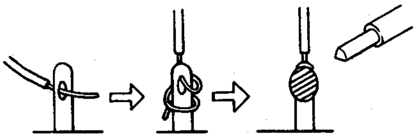


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

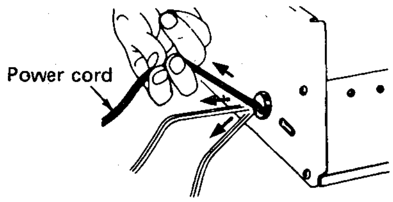


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

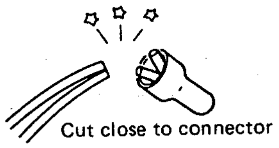


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

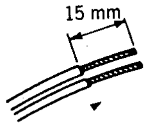


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

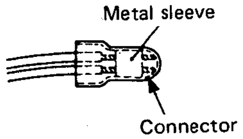


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

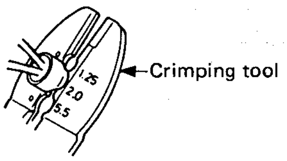


Fig. 6

(5) Check the four points noted in Fig. 7.

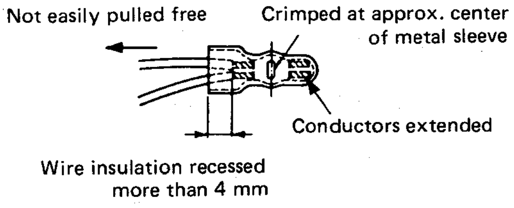

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

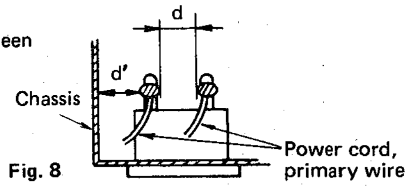


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

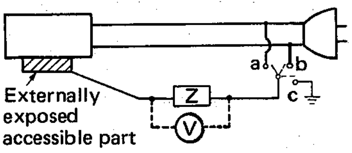


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

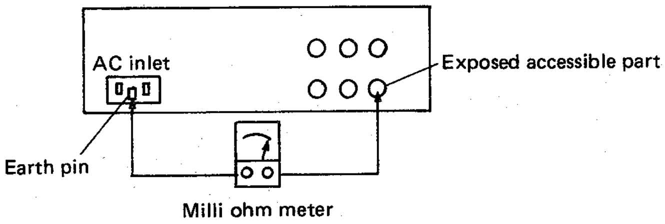


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R≧1 MΩ/500 V DC	AC 1 kV 1 minute	d, d'≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d'≧ 4 mm
110 to 130 V	USA & Canada	—	AC 900 V 1 minute	d, d'≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R≧10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

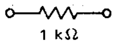
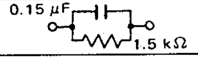
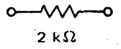
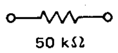
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	 1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	 0.15 µF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	 2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		 50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

JVC Instructions

VIDEO CASSETTE RECORDER
HR-D337MS

MANUEL D'INSTRUCTIONS:
MAGNETOSCOPE A CASSETTE

BEDIENUNGSANLEITUNG:
VIDEO-KASSETTEN-REKORDER

دليل التعليمات
مسجل كاسيت الفيديو

HQ

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SAFETY PRECAUTIONS

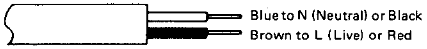
The rating plate and the safety caution are on the rear of the unit.

WARNING – DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

IMPORTANT (In the United Kingdom)
Mains Supply (240 V∿, 50 Hz only)

IMPORTANT

Do not make any connection to the Larger Terminal coded E or Green. The wires in the mains lead are coloured in accordance with following code:



If these colours do not correspond with the terminal identifications of your plug, connect as follows:
Blue wire to terminal coded N (Neutral) or coloured Black.
Brown wire to terminal coded L (Live) or coloured Red.
If in doubt – consult a competent electrician.

CAUTION

- When you are not using the HR-D337MS for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the AC outlet prior to connecting or disconnecting any signal lead or aerial.

VHS
PAL SECAM NTSC

HQ

- Only cassettes marked "VHS" can be used with this video cassette recorder.
- HQ VHS is compatible with existing VHS equipment.

FOR YOUR SAFETY (in Australia)
Install any external aerial to AS 1417.1

Omkopplaren OPERATE på denna apparat är sekundärt kopplad och skiljer inte apparaten från nätet i läge OPERATE OFF.

The OPERATE button does not completely shut off mains power from the unit, but switches operating current on and off.

BEMAERK: I stilling OFF er apparatet stadig forbundet med lysnettet Hvis det ønskes fuldstændig afbrudt skai netledningen trækkes ud.

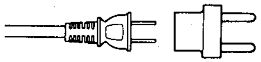
This unit is produced to comply with Directive 82/499/EEC, CISPR Pub. 13 and Pub. 14 and Standard IEC 65.

Video tapes recorded with this video recorder in the LP (Long Play) or EP (Extended Play) mode cannot be played back on a single-speed video recorder.

POWER SYSTEM

This set operates on any voltage between 110 and 240 V, 50/60 Hz with automatic switching.
There is no switch nor control for power line adaptation.

Use the plug adapter (provided) depending on the type of your AC wall outlet.



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Printed in Japan

FEATURES

Multi-system flexibility

- **PAL/MESECAM/SECAM/NTSC3.58/NTSC4.43** five-system recording and playback circuitry incorporated to adapt to television colour systems the world over.
- **Worldwide-compatible multi-system tuner (B/G, I, D/K, M)** built in to directly receive off-air TV programmes in most countries. (A separate tuner will be needed in SECAM-L areas.)
- **Multi-system RF converter (G, I, K, M) for UHF channels** built in to provide greater compatibility with televisions.
- **Multi-voltage operation with automatic switching (110 – 240 V AC)**

High-quality pictures

- **HQ (High Quality) System technologies** with a Detail Enhancer (DE) and 20 % higher White Clip Level (WCL).
- **Long 8-hour recording time** in the LP (Long Play) mode for PAL/SECAM/MESECAM recording or EP mode (Extended Play) mode for NTSC recording.
- **Double-Azimuth 4-head (DA-4) system** for quality recording and playback at both recording speeds.
- **Noiseless field stills and 5-speed slow motion** available with PAL/SECAM/MESECAM SP mode recordings.

Tuner and timer features

- **Voltage synthesized VHF/UHF/CATV (NTSC-M) tuner** with 32-channel preset capacity.
- **10-Key random-access remote channel selection** and up/down scanning.
- **Instant timer recording** with auto shut-off.
- **14-Day/4-event programmable timer.**
- **Overlapped programme warning:** programme numbers on the FDP blink when the preset time spans of the programmes overlap.
- Timer programme review to show the preset programme contents in the order of execution.

Tape access features

- **Index Search** for locating the beginning of each recording for automatic start of playback, by detecting the index code automatically marked when recording was initiated.
- **Counter go-to function** for direct access to any point on a tape specified by keying in a counter number with the 10 numeric keys.
- **Shuttle Search with lock function:** with the button locked or held depressed for instant release, offers high-speed playback at 9 times (PAL/SECAM/MESECAM) or 7 times (NTSC) normal speed in either direction.
- Counter memory for returning to a point on a tape corresponding to the counter reading of "0000".

Other value features

- Automatic functions including Auto Play and Next-Function Memory.
- Infrared remote control with 10-digit keypad for channel selection.
- On-screen record-pause mode display which signals elapsed pause time.
- Electronic tracking controls.
- Comprehensive fluorescent display.
- Tape counter switchable to elapsed recording time indicator.
- Picture sharpness control.

PRECAUTIONS

Handling and storage

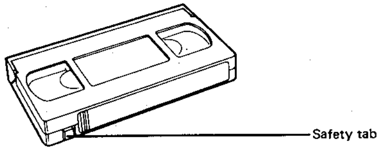
- Avoid using the recorder under the following conditions:
  - extremely hot, cold or humid places,
  - dusty places,
  - near appliances generating strong magnetic fields,
  - places subject to vibrations, and
  - poorly ventilated places.
- Be careful of moisture condensation.
  Avoid using the recorder immediately after moving from a cold place to a warm place. The water vapour in warm air will condense on the still-cold video head drum and tape guides and may cause damage to the tape and the recorder.
- Handle the recorder carefully.
  - Do not block the ventilation openings.
  - Do not place anything heavy on the recorder.
  - Do not place anything which might spill and cause trouble on the top cover of the recorder.
  - Use in horizontal (flat) position only.
- In case of transportation,
  - Avoid violent shocks to the recorder during packing and transportation.
  - Before packing, be sure to remove the cassette from the recorder.

Video cassettes

- This recorder employs VHS-type cassettes only.

Cassettes	Recording time	Recording system
E-240	240/480 minutes	PAL/SECAM/MESECAM
E-180	180/360 minutes	PAL/SECAM/MESECAM
E-120	120/240 minutes	PAL/SECAM/MESECAM
E-90	90/180 minutes	PAL/SECAM/MESECAM
E-30	30/60 minutes	PAL/SECAM/MESECAM
T-160	160/480 minutes	NTSC
T-120	120/360 minutes	NTSC
T-90	90/270 minutes	NTSC
T-60	60/180 minutes	NTSC
T-30	30/90 minutes	NTSC

- Video cassettes are equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording cannot be performed. If you wish to record on a cassette whose tab has already been removed, use adhesive tape to block the hole.



- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid extreme humidity, violent vibrations or shocks, strong magnetic fields (near a motor, transformer or magnet) and dusty places.
- Place the cassettes in cassette cases and position vertically.

Moisture condensation

- If you pour a cold liquid into a glass, water vapour in the air will condense on the surface of the glass. This is called moisture condensation.
- Moisture condensation on the head drum, one of the most crucial parts of the video recorder, will cause damage to the tape.
- Moisture condensation is apt to occur under the following conditions:
  - when the recorder is moved from a cold place to a warm place, and
  - under extremely humid conditions.
- In conditions where moisture condensation may occur, keep the power cord plugged in an AC outlet and the OPERATE switch set to ON; this would help prevent condensation from occurring. When condensation has occurred, it will not evaporate quickly once the power is switched on. Wait a few hours for the recorder to become dry.

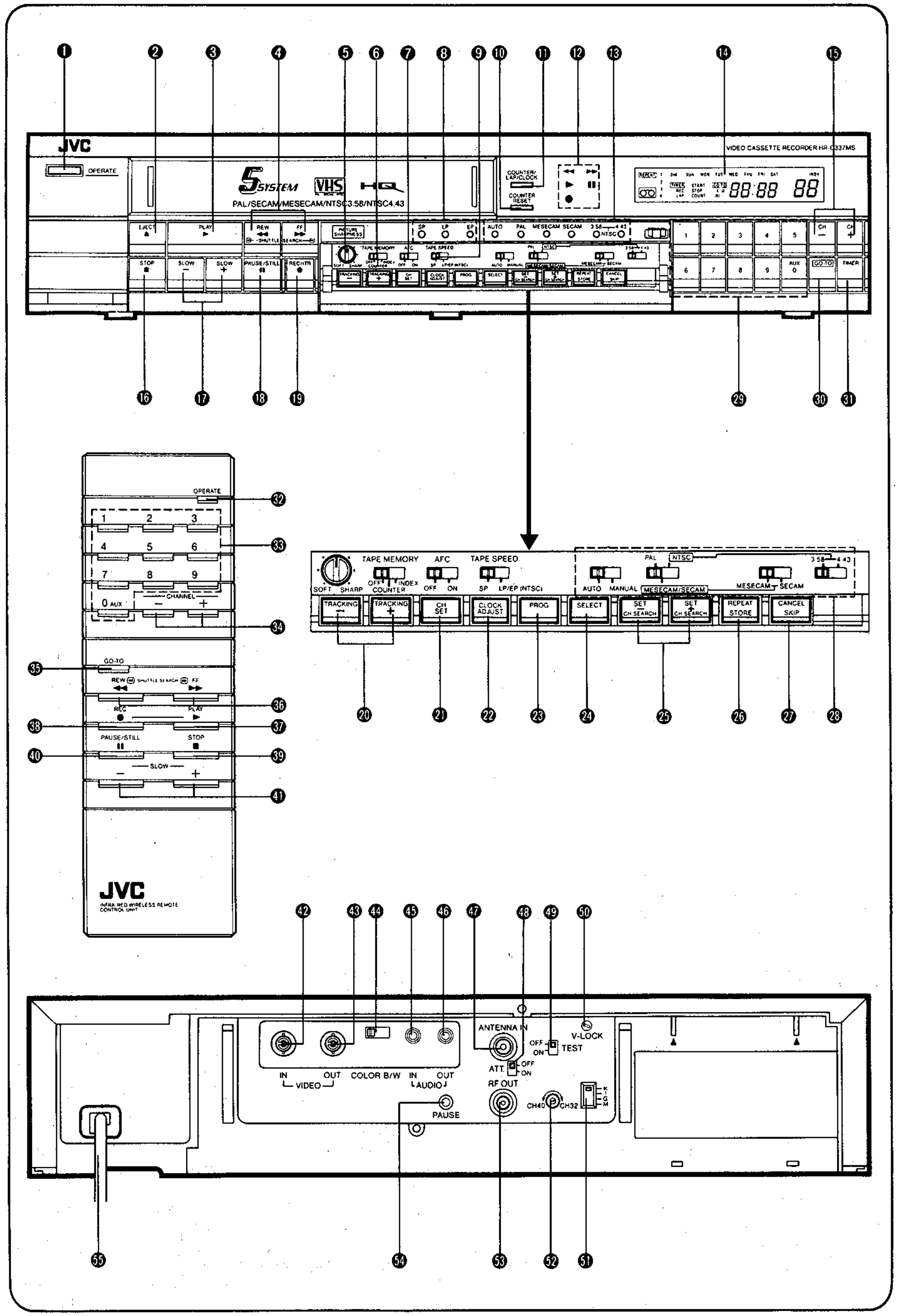
Operation

- When a cassette is loaded, the power is switched on automatically.
- The cassette can be unloaded even when the power is off. Pressing the EJECT button turns the power on and, after ejection of the cassette, shuts it off automatically in this case.
- As long as the TIMER button is engaged with the TIMER indicator lit, the OPERATE and EJECT buttons have no effect and unloading of a cassette is not possible. If a cassette has not yet been inserted, simply insert a cassette; the power will be switched on to load the cassette properly and, after completion of automatic loading, the Timer Recording Standby mode will be engaged with power off.

Remote control unit

- Avoid violent shocks, especially take care not to drop the unit.
- Take care not to allow liquid to spill into the unit.
- Do not place heavy objects on the unit.
- Avoid leaving the unit in places subject to direct sunlight or extremely high temperatures.

IMPORTANT: It is permissible to record television programmes only in the event that third party copyrights and other rights are not violated.


JVC
OPERATE
5 SYSTEM
VHS
HQ
PAL/SECAM/MESECAM/NTSC3.58/NTSC4.43
VIDEO CASSETTE RECORDER HR-D337MS
EJECT
PLAY
REW
FF
SHUTTLE SEARCH
STOP
SLOW
PAUSE/STILL
REC/ITR
COUNTER/LAP/CLOCK
COUNTER RESET
TAPE MEMORY
AFC
TAPE SPEED
SOFT
SHARP
COUNTER
OFF
INDEX
ON
SP
LP/EP (NTSC)
AUTO
MANUAL
PAL
NTSC
MESECAM/SECAM
MESECAM
SECAM
3.58
4.43
TRACKING
CH SET
CLOCK ADJUST
PROG
SELECT
SET
CH SEARCH
REPEAT STORE
CANCEL SKIP
CH
AUX
GO-TO
TIMER
CHANNEL
REC
INFRA-RED WIRELESS REMOTE CONTROL UNIT
ANTENNA IN
V-LOCK
TEST
OFF
ON
ATT
RF OUT
IN
OUT
VIDEO
COLOR B/W
AUDIO
PAUSE
CH40
CH32
1
2
3
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CONTROLS, INDICATORS AND CONNECTORS

Refer to the diagrams on the front foldout page.

Front Panel

❶ OPERATE button with green indicator
Press to apply operating power to the recorder. The indicator will light. Loading a cassette also turns the power on.

❷ Cassette EJECT button

❸ PLAY button
Press to play back the tape or cancel the Pause/Still and Search modes.

❹ REW and FF (SHUTTLE SEARCH) buttons
Press while in the Stop mode to rewind or fast-forward the tape; press while in the Play mode to view the speeded-up picture for programme search. See page 13, 15 and 16.

❺ PICTURE SHARPNESS control
Turn this knob clockwise to make the picture sharper. Turn counterclockwise to give the picture a softer tone. Effective only for playback pictures. (No effect for recording.)

❻ TAPE MEMORY switch

COUNTER:	The tape will stop automatically at the counter reading of about "0000" in the Rewind or Fast Forward mode. See page 15.
INDEX:	The index code marked at the beginning of each recording will be detected in the Shuttle Search mode for automatic start of playback. See page 15.
OFF:	Set to OFF if you are not going to use either of the two functions.

❼ AFC switch
Normally set to ON.

❽ SP/LP/EP indicators
The recording speed selected with the TAPE SPEED switch ❾ is indicated by one of these LED indicators.

SP: Lights when the SP position is selected.

LP: Lights when the LP/EP position is selected with the PAL/MESECAM/SECAM system working.

EP: Lights when the LP/EP position is selected with the NTSC system working.

- During playback, the tape mode will automatically be detected and the corresponding LED will light.
- NTSC LP tapes (recorded at half-speed on some other machines) can also be played back on this recorder, but the LP indicator will not function for these recordings.

❾ TAPE SPEED switch

SP: Set to this position when you wish recordings to be made in the SP (Standard Play) mode for all systems.

LP/EP (NTSC): Set to this position when you wish to record longer TV shows or for unattended and prolonged recording of a number of TV shows with a combined time of up to 8 hours. In PAL/SECAM/MESECAM, the LP (Long Play) mode will be engaged; in NTSC, the EP (Extended Play) mode will be engaged.

❿ COUNTER RESET button
Press to reset the counter reading or lap time to "0000" or "0:00" respectively.

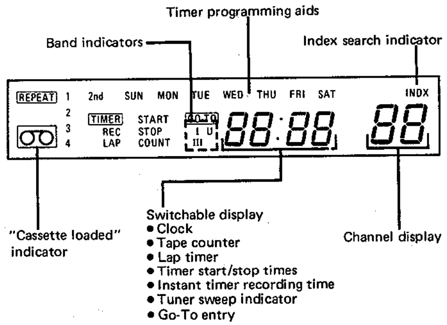
⓫ COUNTER/LAP/CLOCK button
Press to switch the display among tape counter, lap time indicator and clock. Also used to change the display from the timer programming mode to the clock mode.

⓬ Mode indicators

◀◀: Rewind mode
▶▶: Fast Forward mode
▶: Play mode
▶❚❚: Still or Slow mode
●▶❚❚: Pause mode (In the Pause mode, a white bar will also be displayed on the TV screen.)
●▶: Record mode
◀◀ ▶: Reverse Shuttle Search mode
▶▶ ▶: Forward Shuttle Search mode

⓭ Colour system indicators
These indicators show the selected colour system according to the detected input signal or the settings of the colour system select switches ㉘ . For more details refer to pages 7 through 10.

⓮ Fluorescent display panel


Timer programming aids
Band indicators
Index search indicator
REPEAT
1
2
3
4
2nd
SUN
MON
TUE
WED
THU
FRI
SAT
INDX
TIMER
REC
LAP
START
STOP
COUNT
GO-TO
I
U
III
88:88
88
"Cassette loaded" indicator
Switchable display
● Clock
● Tape counter
● Lap timer
● Timer start/stop times
● Instant timer recording time
● Tuner sweep indicator
● Go-To entry
Channel display

⓯ CH –/+ buttons
Press either button to scan to a desired channel.

⓰ STOP button
Press to stop the tape.

⓱ SLOW –/+ buttons
Press in the Play or Still mode to engage the Slow-motion mode. To increase the speed, press "+" button; to decrease the speed, press "–" button (see page 13).

⓲ PAUSE/STILL button
Press to stop the tape temporarily to avoid recording of unwanted material or to view a still picture. The still picture can be advanced step by step or continuously.

⓳ REC/ITR button
Press once to start recording. Pressing it again engages the Instant Timer Recording mode. See page 14.

⓴ TRACKING –/+ buttons
Press either button to minimise noise bars, if observed, during playback and slow-motion.

㉑ CH SET button
Press this button to engage or disengage the tuner perset mode (see page 12).

㉒ CLOCK ADJUST button
Press to adjust the clock.

㉓ PROG button
Press to programme the timer.

㉔ SELECT button
Press to select the band in tuner presetting; press to select the item to be set in clock setting or timer programming.

㉕ SET/CH SEARCH -/+ buttons
Press to set to the correct data in clock setting or timer programming; press to search for broadcast programmes in tuner presetting.

㉖ REPEAT/STORE button
Press to enter the repeat command in timer programming; press to store the tuned-in channel in tuner presetting.

㉗ CANCEL/SKIP button
Press to cancel the preset programme in timer programming; press to skip unnecessary channels in tuner presetting.

㉘ Colour system select switches

- **AUTO/MANUAL switch**
  A master switch for selecting the television colour system. First set this switch to either AUTO or MANUAL depending on the required mode. When the MANUAL mode is selected, set the other system select switches manually as required. For more details refer to page 10.
- **PAL/MESECAM/SECAM/NTSC switch**
  Use this switch to manually select the appropriate sysem when the AUTO/MANUAL switch is set to MANUAL. For more details refer to page 10.
- **MESECAM/SECAM switch**
  Use this switch to select the appropriate system. This switch must be set correctly even in the AUTO mode. For more details refer to page 10.
- **NTSC 3.58/4.43 switch**
  Use this switch to select the appropriate system. This switch must be set correctly even in the AUTO mode. For more details refer to page 10.

㉙ Numeric keys
Use these keys for direct channel selection (see page 12) or key in the counter number in the Counter Go-To mode. The "0" key can also be used to select the external source recording mode (AUX), in which "AU" will appear in the channel display.

㉚ GO-TO button
Press to engage the Counter Go-To mode. See page 16.

㉛ TIMER button
Press to engage the Timer Recording Standby mode.

Remote Control Unit

㉜ OPERATE button
Press to turn the recorder power on or off.

㉝ Numeric keys

㉞ CHANNEL -/+ buttons
Press either button to select a desired channel.

㉟ GO-TO button

㊱ REW and FF (SHUTTLE SEARCH) buttons

㊲ PLAY button

㊳ REC button
Press together with the PLAY button to start recording.

㊴ STOP button

㊵ PAUSE/STILL button

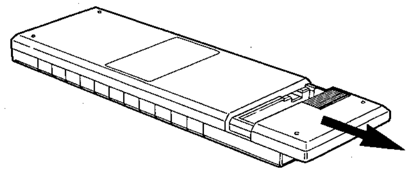
㊶ SLOW buttons

Operating distance for remote control unit

- The maximum operating distance is about 8 m.

Installing the batteries

- Insert two "UM-4"-size batteries (provided) into the battery compartment on the rear of the remote control unit, observing correct polarity.



Rear Panel

㊷ VIDEO IN connector
Connect the video output of other video equipment such as another video tape recorder for recording video signals.

㊸ VIDEO OUT connector
Video signals being recorded or played back are available from this connector.

㊹ Video mode select switch
This applies to both recording and playback.
COLOR: Set to this position when the input or playback video signal is in colour.
B/W: Set to this position when the input or playback video signal is monochrome.

㊺ AUDIO IN connector
Connect an audio tape recorder or other audio sources for recording sound.

㊻ AUDIO OUT connector
Audio signals can be obtained from this connector.

㊼ Aerial input connector (ANTENNA IN)
Connect an aerial to this connector.

㊽ Attenuator switch (ATT.)
Set to OFF to receive broadcasts from distant stations. Set to ON to receive broadcasts of high field strength.

㊾ TEST signal switch
Set to ON when tuning your TV receiver for the VIDEO CHANNEL. A test signal in the form of two vertical white bars will be available.

㊿ V-LOCK adjustment screw
When operating in the Still mode, adjust this screw to eliminate any vertical vibration of the picture. (For any inquiry about this adjustment, contact a JVC dealer.)

(51) SYSTEM select switch
Selects the system of the built-in RF converter.
Select K, I, G or M depending on the system of your television receiver.
This switch is preset to G prior to shipment.

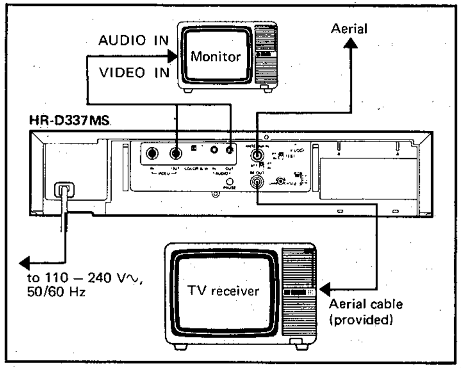
(52) RF converter frequency adjustment screw
See below.

(53) RF OUT connector
Connect to the aerial connector of a TV receiver through the aerial cable (provided).

(54) Remote PAUSE terminal
When using a JVC video camera, connect the remote control cable of the camera adapter to this terminal for the purpose of controlling the starting and stopping of the tape with the camera's start/stop switch.

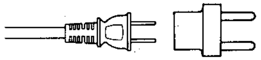
(55) Power cord

CONNECTIONS



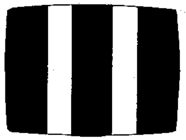
1. Remove the aerial cable from the TV receiver and reconnect it to the recorder's ANTENNA IN ㊼ connector. The recorder is then ready to record off-air programmes.
2. Connect the recorder's RF OUT connector (53) to the TV receiver's aerial terminal using the provided aerial cable. The TV receiver is then ready to receive broadcast programmes as well as accommodate video cassette playback.
3. When you use a video monitor for playback, connect the VIDEO OUT ㊸ and AUDIO OUT ㊻ connectors of the recorder to the VIDEO IN and AUDIO IN connectors of the video monitor.

- Use the plug adapter (provided) depending on the type of your AC wall outlet.



VIDEO CHANNEL SETTING

1. Press the OPERATE button ❶ to turn the power on. Turn on the TV receiver.
2. Set the TEST switch ㊾ to ON.
3. Adjust your TV receiver in the vicinity of UHF channel E36 until you bring in the two white signal bars on the screen as illustrated. This is your VIDEO CHANNEL.
   *UHF channel 34 in the USA, and UHF channel 33 in Japan.
4. Reset the TEST switch to OFF.



Notes:

- If some interference noise is seen on the screen because of broadcasts on neighbouring channels or if your preset broadcasts should be affected in picture quality, it is necessary to shift the RF converter output frequency from that of channel E36. Consult your JVC dealer for making this adjustment.
- Video channel setting is also possible using a prerecorded VHS video cassette. Play back the tape and tune the TV receiver to obtain clear pictures and sound while monitoring the playback picture on the TV screen.
- If your TV receiver is not provided with an AFC circuit, perform fine tuning of the TV receiver when you are actually viewing video cassettes.
- Set the SYSTEM select switch (51) to the appropriate position.

IMPORTANT INFORMATION ON COLOUR SYSTEM SELECTION

The HR-D337MS incorporates the circuitry necessary to record or play back PAL, SECAM and NTSC signals from any television broadcasting system in the world. To select the right colour system, there are four switches on the HR-D337MS:

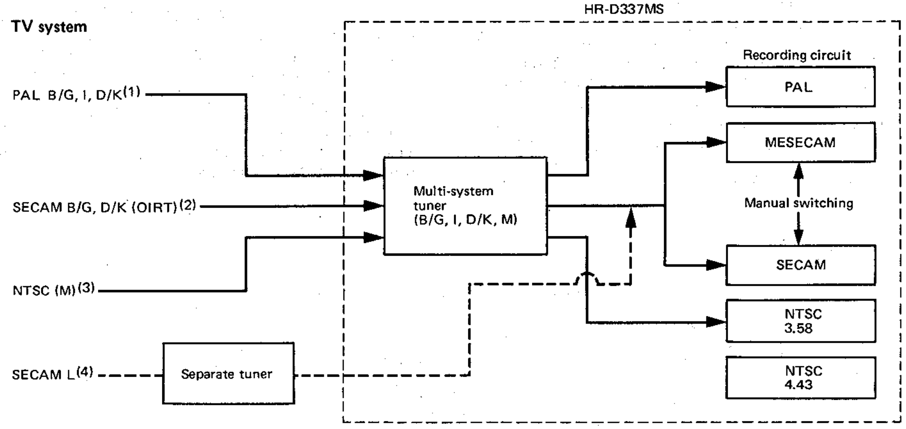
AUTO/MANUAL switch: A master switch to select the automatic or manual setting mode. In most cases, when this switch is set to AUTO, the appropriate system will be selected according to the input or playback signal, provided that the relevant sub switch is set correctly for MESECAM/SECAM recording or NTSC playback.

PAL/MESECAM-SECAM/NTSC switch: To select the appropriate system in the MANUAL mode.

MESECAM/SECAM switch: A sub switch to select the type of resulting recorded tape as required. When recording, this switch must be set correctly in both the AUTO and MANUAL modes.

NTSC 3.58/4.43 switch: A sub switch to select the type of monitor on which NTSC tapes are to be viewed. During playback this switch must be set correctly in both the AUTO and MANUAL modes.

OFF-AIR RECORDING

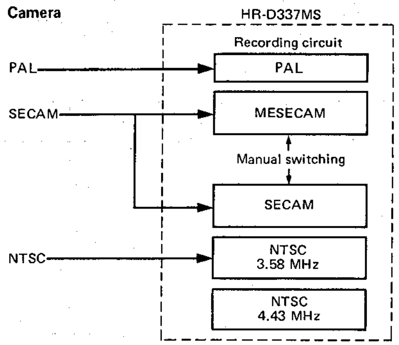


The built-in multi-system tuner is capable of receiving PAL B/G, I and D/K, SECAM B/G and D/K, and NTSC broadcasts.

1. **PAL B/G, I and D/K broadcasts**
   PAL B/G is the colour television broadcasting sytem used in most Continental European countries (except France, Luxemburg and Monaco) and some countries of the Middle East, Africa and Asia. PAL I is the system used in the United Kingdom and Hong Kong, and PAL D/K, in various countries. The built-in tuner can be used to record off the air in these countries. Simply set the master switch to AUTO.
2. **SECAM B/G and D/K (OIRT) broadcasts**
   SECAM B/G is the colour television broadcasting system employed in many countries of the Middle East and Africa, and a few Eastern European countries including East Germany, while SECAM D/K is the system used in most Eastern European countries. TV broadcasts in these countries can be recorded using the built-in tuner. If the MANUAL mode is selected with the master switch, set the system switch to MESECAM/SECAM, and, whether in AUTO or MANUAL, the MESECAM/SECAM switch to either MESECAM or SECAM depending on the type of resulting tape you want.
3. **NTSC broadcasts**
   NTSC is the colour television broadcasting system used in the USA, Canada, Japan, several Latin American countries and a few Asian countries. TV broadcasts in these countries can be recorded using the built-in tuner. The broadcast NTSC signal has a colour subcarrier frequency of 3.58 MHz. Therefore, in the AUTO mode, the NTSC 3.58 circuit is automatically selected.
4. **SECAM L broadcasts**
   SECAM L is the colour television broadcasting system usually identified as the French SECAM system and is employed in France and a few other countries. To record off the air in these countries, a tuner (or monitor-receiver) of the SECAM L system is necessary.

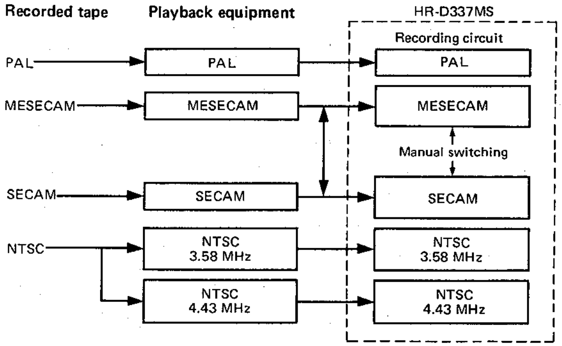
For further information, consult your nearest JVC dealer.

CAMERA RECORDING



Video cameras are built to one of the three standards; PAL, SECAM or NTSC. Any camera can be used with this recorder. The switch settings are identical to those for recording broadcasts of each system. The resulting recording corresponds to the respective system. Remember, for instance, that it is not possible to produce NTSC tapes with a PAL camera even if the NTSC system is selected manually.

TAPE-TO-TAPE TRANSFER



There are 4 different types of recorded tape, depending on the signal recorded.

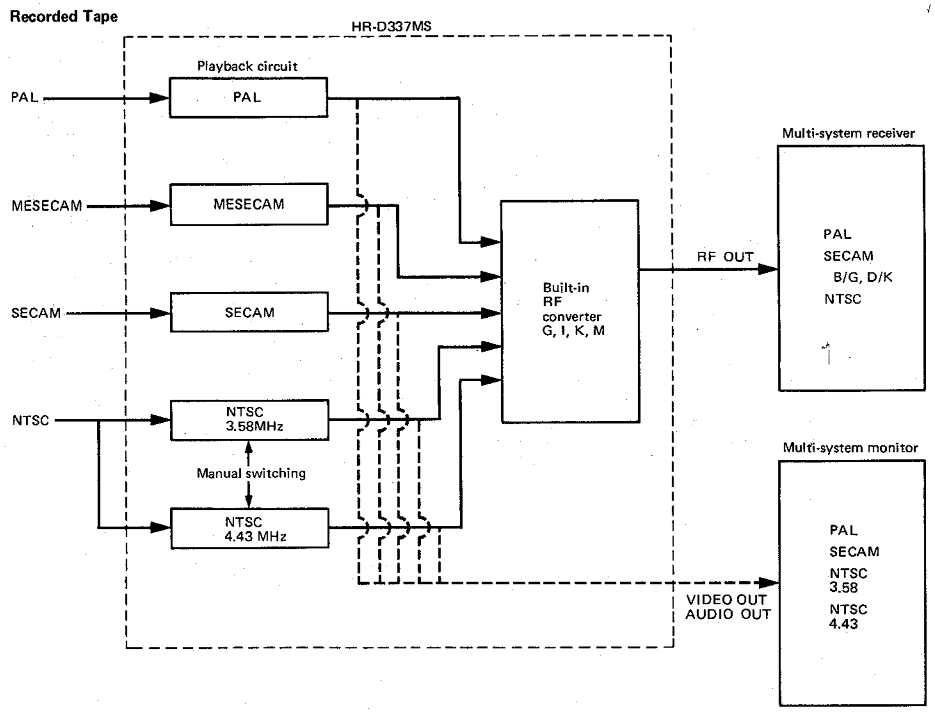
PAL tapes: Whatever broadcasts (B/G, I, D/K) the recording was made from, the resulting tape contains the same PAL signal. To transfer PAL tapes, a second recorder built to the PAL standard is required to play them back. The switch settings are identical to those for recording PAL broadcasts.

MESECAM tapes: MESECAM is a designation for tapes of SECAM broadcasts or SECAM camera signals that have been recorded with PAL/MESECAM recorders or through the MESECAM circuit of this recorder. To transfer MESECAM signals, use a second recorder which is capable of processing MESECAM signals. Depending on what type of tape is desired, either the MESECAM or SECAM circuit of this recorder can be used for recording.

SECAM tapes: Whatever broadcasts (B/G, D/K) the recording was made from, the resulting tape contains the same SECAM signal. To transfer SECAM signals, use a second recorder of the SECAM standard. Depending on what type of tape is desired, either the MESECAM or SECAM circuit of this recorder can be used for recording.

NTSC tapes: Playback equipment can be either of the NTSC 3.58 MHz or 4.43 MHz system. Depending on the played back tape signal, this recorder automatically selects the corresponding system in the AUTO mode.

PLAYBACK



The HR-D337MS can play back all 4 types of recorded tape. The built-in multi-system RF converter processes all signals for output from the RF OUT connector. Therefore, with a multi-system receiver, you can view all types of tape via RF connection. If you own a multi-system monitor, use the VIDEO OUT/AUDIO OUT connection. If your receiver or monitor is not equipped with the NTSC 3.58 MHz circuit, but only with NTSC 4.43 MHz, be sure to set the NTSC 3.58/4.43 switch to 4.43 when playing back NTSC tapes.

CAUTION

When the HR-D337MS is connected to a multi-system television set, it may happen that no colours appear on the screen if the colour system select switch of the television set is adjusted to the AUTO position. In such a case, change the setting of the colour system select switch of the television set to the position which corresponds to the setting (G, I, K or M) of the RF converter system select switch on the rear panel of the HR-D337MS.

System select switch settings & Indicators

Use	Source	System select switches						Indicators	Remarks
		AUTO mode 1) AUTO MANUAL			MANUAL mode AUTO MANUAL			AUTO ○ 1) PAL ○ MESECAM ○ SECAM ○ NTSC 3.58 ○ NTSC 4.43 ○	
		PAL NTSC MESECAM/SECAM	MESECAM SECAM	NTSC 3.58 4.43	PAL NTSC MESECAM/SECAM	MESECAM SECAM	NTSC 3.58 4.43		
Off-air recording	PAL	*	*	*	PAL	*	*	PAL	
	SECAM	*	MESECAM	*	MESECAM/ SECAM	MESECAM	*	MESECAM	To produce MESECAM tapes.
			SECAM			SECAM		SECAM	To produce SECAM tapes.
	NTSC	*	*	*	NTSC	*	*	NTSC 3.58	
Camera recording	PAL	*	*	*	PAL	*	*	PAL	
	SECAM	*	MESECAM	*	MESECAM/ SECAM	MESECAM	*	MESECAM	To produce MESECAM tapes.
			SECAM			SECAM		SECAM	To produce SECAM tapes.
	NTSC	*	*	*	NTSC	*	*	NTSC 3.58	
Tape-to-tape transfer	PAL	*	*	*	PAL	*	*	PAL	
	MESECAM/ SECAM	*	MESECAM	*	MESECAM/ SECAM	MESECAM	*	MESECAM	To produce MESECAM tapes.
			SECAM			SECAM		SECAM	To produce SECAM tapes.
	NTSC (played on NTSC 3.58 MHz machine)	*	*	*	NTSC	*	*	NTSC 3.58	
	NTSC (played on NTSC 4.43 MHz machine)	*	*	*	NTSC	*	*	NTSC 4.43	
Playback	PAL	*	*	*	PAL	*	*	PAL	
	MESECAM	*	*	*	MESECAM/ SECAM	*	*	MESECAM	
	SECAM	*	*	*	MESECAM/ SECAM	*	*	SECAM	
	NTSC (to be viewed on 3.58 MHz monitor)	*	*	NTSC 3.58	NTSC	*	NTSC 3.58	NTSC 3.58	
	NTSC (to be viewed on 4.43 MHz monitor)	*	*	NTSC 4.43	NTSC	*	NTSC 4.43	NTSC 4.43	

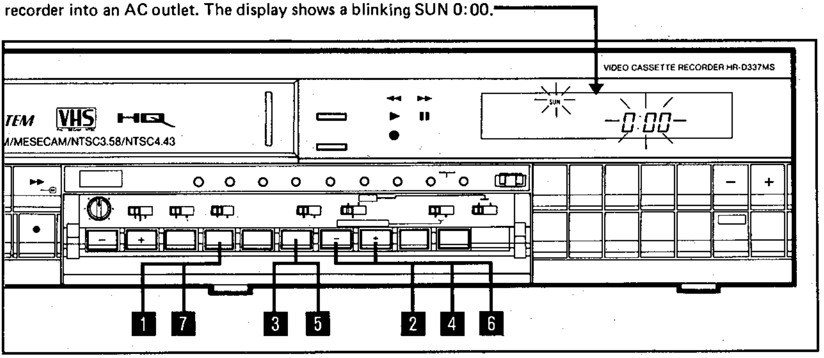
*The position of a switch so marked is irrelevant.
1) In the AUTO mode, the AUTO indicator remains lit as well as the one indicating the system.

Note:

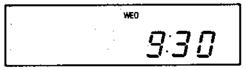
- With (CCIR) B/W signal input, or when a (CCIR) B/W tape is played back in the AUTO mode, the PAL indicator will light. The NTSC 4.43 indicator will light when EIA B/W signals are being input, and either the NTSC 3.58 or 4.43 indicator will light, depending on the setting of the NTSC 3.58/4.43 switch, during playback of EIA B/W tapes.

CLOCK SETTING

Plug the recorder into an AC outlet. The display shows a blinking SUN 0:00.



- 1 Press CLOCK ADJUST ㉒ . The indicated day will blink.
- 2 Press SET ㉕ until the correct day indication appears.
- 3 Press SELECT ㉔ . The indicated hour digits will blink.
- 4 Press SET until the correct hour indication appears.
- 5 Press SELECT. The indicated minute digits will blink.
- 6 Press SET until the correct minute indication appears.
- 7 Press CLOCK ADJUST at the exact instant of the time signal and clock will be set accurately to the present time.



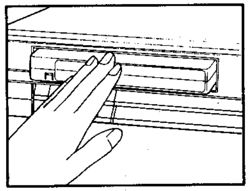
Note:
- Clock setting is not possible in the timer recording standby mode. First check to see that the TIMER indicator on the FDP is not lit.

Power failure indicator
The blinking SUN 0:00 (initial condition of the display) is also a power failure indicator, showing that there has been a power failure exceeding 10 seconds. Re-adjusting the time restores the normal condition of the clock display.

LOADING AND UNLOADING A CASSETTE

Loading

Insert a cassette as illustrated. Be sure to insert it firmly into the slot; otherwise, it will be automatically ejected.



- The automatic loading mechanism will operate only when the cassette is inserted correctly.
- With a cassette inserted, the "cassette loaded" indicator will appear on the FDP.

Unloading

Press the EJECT button ❷.

CAUTION
- If unloading of the cassette is not possible, check to see whether the TIMER indicator is lit. If so, press the TIMER button so the TIMER indicator extinguishes.
- Do not attempt to pull out the cassette once automatic loading has started.
- Do not insert fingers or any foreign object beyond the door of the cassette loading slot, as this could lead to injury or damage to the mechanism. Show special caution with children.

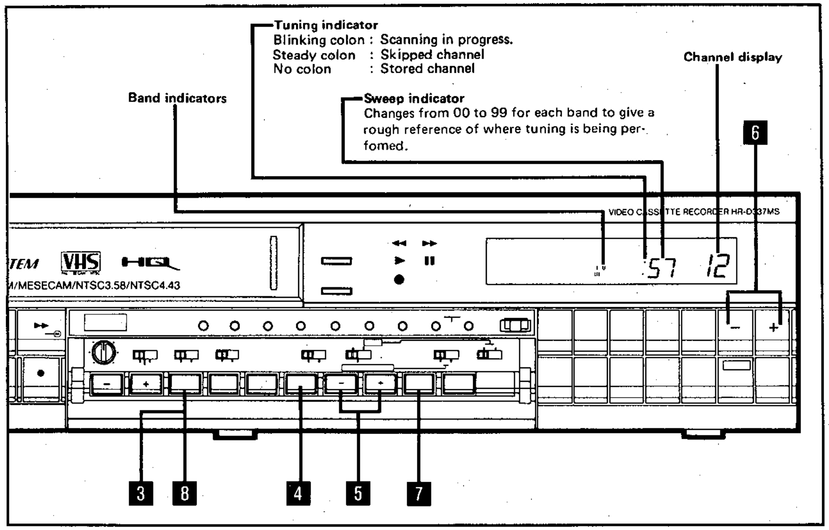
AUTO POWER-ON AND AUTO PLAY SYSTEM
- The cassette can be loaded even when the power has not been turned on. Inserting a cassette into the loading slot turns the power on automatically.
- Inserting a cassette, with its safety tab removed, turns the recorder on and playback of the cassette begins automatically.

POWER-OFF EJECT SYSTEM
- The cassette can be unloaded even after the power has been turned off. Pressing the EJECT button turns the power on automatically and, after ejection of the cassette, shuts it off automatically.

OPERATING THE BUILT-IN TUNER

The HR-D337MS incorporates a voltage synthesized tuner with 32-channel preset capacity. Only channels stored can be called up with the CH buttons in modes other than Channel Set.

In the Channel Set mode, all channel numbers including skipped ones are successively displayed so that they can be stored or skipped.



Tuning indicator
Blinking colon : Scanning in progress.
Steady colon : Skipped channel
No colon : Stored channel

Sweep indicator
Changes from 00 to 99 for each band to give a rough reference of where tuning is being perfomed.

Storing channels

- 1 Turn on the TV receiver and adjust it to your video channel.
- 2 Turn on the recorder.
  - If "AU" is in the channel display, press one of the numeric keys to change it to any number.
- 3 Press CH SET ㉑ .
- 4 Press SELECT ㉔ until the correct band indication appears.
- 5 Press CH SEARCH ㉕ until the desired broadcast signal is detected; use either the "-" or "+" button depending on the direction of search.
  - The tuning indicator "colon" will blink and the sweep indicator will count down or up.
- 6 Press CH ⓯ to select the channel to be stored.
- 7 Press STORE ㉖ . The "colon" will disappear.
  - Repeat steps 4 through 7 for all necessary channels.
- 8 Press CH SET to disengage the Channel Set mode.

Skipping channels

1. Press CH to select the channel to be skipped.
2. Press CH SET.
   - The band indicator and the sweep indicator corresponding to the broadcast stored in that channel will appear.
3. Press SKIP ㉗ . The steady "colon" will appear.
4. Press CH SET to disengage the Channel Set mode.

Scanning channels

Stored channels can be called up in ascending or descending order by using CH buttons ⓯ on the recorder or the CHANNEL buttons ㉞ on the remote control.

Selecting channels

By using the numeric keys ㉙, ㉝ , direct-access channel selection is also possible.

- When using the 10 numeric keys, pay attention to the following: When 1, 2 or 3 is entered, it blinks for about 2 seconds. To set channel 1, 2 or 3, let it blink until it remains lit. To key in a two-digit number, enter the 2nd number while 1, 2 or 3 is blinking. The number entered first will be shifted to the tens place and channels 10 to 32 can be set. Invalid numbers (larger than 32) will be rejected.

Channel coverage and Available channels in each band

Band indicator	Frequency	Europe ch	USA ch	Japan ch
I	VHF band I (44 – 103 MHz)	E2 – E4 S1 – S10	2 – 6	1 – 2
III	VHF band III (102 – 300 MHz)	E5 – E12 S11 – S20	7 – 13 CABLE ch A – I J – W	3 – 12
U	UHF band (470 – 870 MHz)	E21 – E69	14 – 79	13 – 62

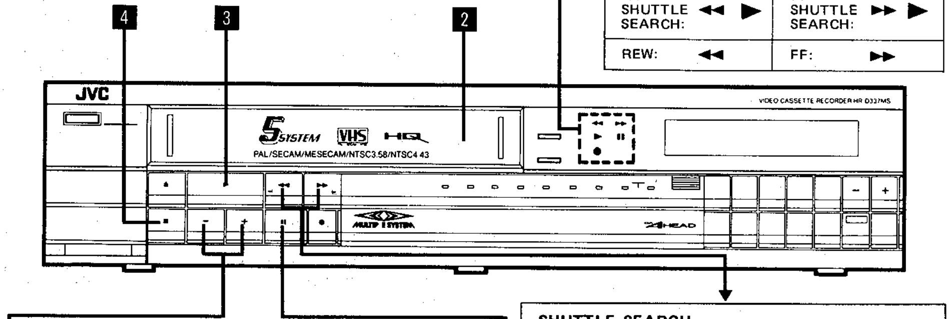
Note:
- It might happen for some reason in NTSC areas that channel searching does not function properly if colour system selection is in the AUTO mode. In such cases, before searching, set the AUTO/MANUAL switch to MANUAL, and the PAL/MESECAM-SECAM/NTSC switch to NTSC.

PLAYING BACK A VIDEO CASSETTE

Confirm the settings of the colour system select switches by referring to the chart on page 10.

Mode indicator

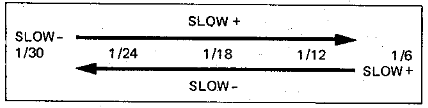
PLAY: ▶	STILL: SLOW: ▶ ❚❚
REW SHUTTLE SEARCH: ◀◀ ▶	FF SHUTTLE SEARCH: ▶▶ ▶
REW: ◀◀	FF: ▶▶


4
3
2
JVC
VIDEO CASSETTE RECORDER HR-D337MS
5 SYSTEM
VHS
HQ
PAL/SECAM/MESECAM/NTSC3.58/NTSC4.43
MULTI 5 SYSTEM
4 HEAD

1. Turn the TV receiver on and adjust it to your video channel.
2. Load a pre-recorded cassette.
   - Power will be switched on automatically.
   - When the cassette loaded has no safety tab, playback will start automatically.
3. Press PLAY ③.
   - The TAPE SPEED switch may be in either position. The SP, LP or EP mode recording is automatically detected and played back at a correct speed respectively with the corresponding indicator lit.
4. Press STOP ⑯ at the end of the programme.
   - The tape will be rewound automatically when its end is reached and the recorder will enter the Stop mode.

SLOW-MOTION PLAYBACK

- Press the "-" button while in the Play or Still mode; slow-motion playback at 1/30 normal speed will start.
- Press the "+" button while in the Play or Still mode; slow-motion playback at 1/6 normal speed will start.
- Each time the "-" button is pressed, the tape speed becomes slower.
- Each time the "+" button is pressed, the tape speed becomes faster.



Notes:
- No pictures in slow-motion playback of LP/ EP recordings.
- With some video cassettes, the TV picture may distort during slow-motion playback. This is not due to any defect of the unit.

Note:
- Colours may slightly flicker with playback of NTSC EP recordings.

SHUTTLE SEARCH

Shuttle Search allows high-speed playback at 9 times (PAL/SECAM)/7 times (NTSC) normal speed in either direction.

1. Press either REW or FF SHUTTLE SEARCH ④ during playback.
2. To cancel the Search mode, press PLAY.
   - No pictures in Shuttle Search of NTSC LP recordings.
   - Colours disappear in Shuttle Search of MESECAM LP recordings.
   - For briefer scanning, keep the SHUTTLE SEARCH button pressed for more than 2 seconds; when you release the button, the Search mode will be cancelled.

STILL PICTURE

1. Press PAUSE/STILL ⑱ during playback.
2. To advance the still picture, press PAUSE/STILL a number of times.
   - Keeping this button pressed continuously advances the picture to give a slow-motion effect.
3. To cancel the Still mode, press PLAY.

Notes:
- No pictures in still playback of LP/EP recordings.
- When the Still mode continues for longer than about 5 minutes, the Stop mode will be entered automatically.
- With some televisions, the still picture may be unstable. This is not due to any defect of the unit.

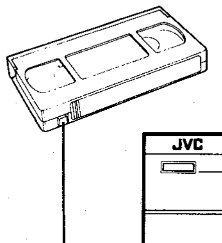
Picture Sharpness Adjustment

Images on the screen can be adjusted to a preferred softer or sharper definition by turning the PICTURE SHARPNESS control ⑤ in the corresponding direction.

Tracking Adjustment

Noise bars may appear on the screen if you play back a tape which was recorded using another recorder. For correction, press either TRACKING control ⑳. Tracking will be reset to the preset standard each time the cassette is ejected. Use the same control for correction of the tracking in slow-motion playback.

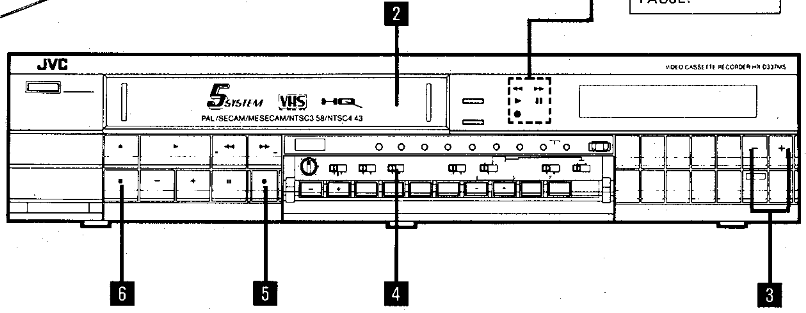
RECORDING TV PROGRAMMES



Confirm the settings of the colour system select switches by referring to the chart on page 10.

Mode indicator

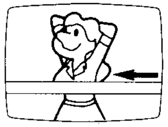
RECORD:	● ▶
RECORD PAUSE:	● ▶ ❚❚


2
JVC
VIDEO CASSETTE RECORDER HR-D337MS
5 SYSTEM
VHS
HQ
PAL/SECAM/MESECAM/NTSC3.58/NTSC4.43
6
5
4
3

1. Turn the TV receiver on and adjust it to your video channel.
2. Load a cassette (with safety tab in place).
   - Power will be switched on automatically.
3. Press either CH ⑮ or the numeric keys ㉙ to select the channel you wish to record.
4. Select the recording speed (SP or LP/EP (NTSC)).

   SP: 4 hours with an E-240 cassette (PAL/SECAM)
   2 hours and 40 minutes with a T-160 cassette (NTSC)
   LP: 8 hours with an E-240 cassette (PAL/SECAM)
   EP: 8 hours with a T-160 cassette (NTSC)
5. Press REC/ITR ⑲ to start recording.
   - Be careful to press REC/ITR only once, or Instant Timer Recording will begin.
   - Press REC and PLAY simultaneously when using the remote control unit.
   - If there is part of the programme you don't want to record, press PAUSE/STILL ⑱. A white horizontal bar will appear on the screen, which reduces in size in 4 steps as time elapses. When the last quarter starts blinking and disappears, the Stop mode will be entered automatically. The pause duration is possible for about 5 minutes.

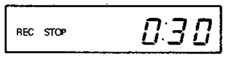
Pause mode indicator



   - To continue recording from the Pause mode, press PLAY ③ while the white bar is on-screen.
6. Press STOP ⑯ at the end of the programme.
   - When the end of the tape is reached during recording, the tape is automatically rewound and stops.

Notes:
- If you want to start recording from the Play mode, first engage the Record-Pause mode by pressing REC/ITR and PAUSE/STILL simultaneously and then press PLAY.
- When recording is restarted from the Pause mode, a few frames recorded before are erased due to overlap of the new recording. This is not due to any defect of the unit.
- The selected channel cannot be altered during recording. If you wish to change the channel, first engage the Pause mode and then select a different channel.

INSTANT TIMER RECORDING



If you wish for recording to stop automatically after a certain period of time, use this Instant Timer Recording mode.

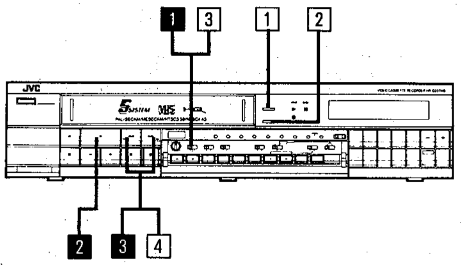
1. Press REC/ITR during recording (or twice if in the Stop mode).
   - The FDP shows "REC STOP 0:30", showing that recording will automatically stop and power will switch off after 30 minutes.
2. Adjust the switch-off time, if necessary.
   - Press REC/ITR to increase it in 30-minute increments (possible up to 4 hours).
   - Use SELECT and SET to set to a more precise time when required (possible up to 8 hours 59 minutes). After setting the time, press SELECT so that all digits stop blinking.

RECORDING ONE PROGRAMME WHILE WATCHING ANOTHER

A programme not being viewed can be recorded while you enjoy another programme.

- Select the channel you wish to record with the recorder's CH buttons.
- Select the channel you wish to view with the TV receiver's channel selector.

INDEX SEARCH AND COUNTER SEARCH



VHS Index Search System

When you start recording from the Stop or Timer Standby mode, an index code is marked on the tape. These index codes can be detected in the Shuttle Search mode.

1. Set TAPE MEMORY ⑥ to INDEX.
2. Press PLAY ③ to start playback.
3. Press REW or FF SHUTTLE SEARCH ④ depending on the direction of search.
   - While the tape is being scanned, "INDX" will be displayed on the FDP.
4. When the first index code is detected, normal playback resumes automatically. To search for the next index code, press the same button once again.

Counter Search

The counter reading of "0000" can be located automatically.

1. Press COUNTER/LAP/CLOCK ⑪ to obtain the Counter mode.
2. Press COUNTER RESET ⑩ during playback or recording at a point which you wish to locate later.
3. Set TAPE MEMORY to COUNTER.
4. Press REW or FF when you need to return to the designated point.
   - The tape will stop automatically at about "0000".
   - When used in conjunction with the Memory Play function, this offers more convenience. See page 16.

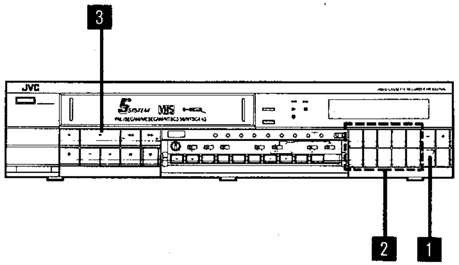
ELAPSED RECORDING TIME INDICATOR

The tape counter is switchable to the elapsed recording time indicator.

1. Press COUNTER/LAP/CLOCK to obtain the Lap mode.
   - The lap time is counted up to 9 hours 59 minutes.
2. To reset the lap time to "0 : 00", press COUNTER RESET.

Notes:
- Unless the COUNTER RESET button is pressed in the Lap mode, the count is maintained even after the power is switched off (as long as the unit remains plugged in to an AC outlet).
- When the Lap mode is engaged during playback, counting does not take place, even though the current count is displayed.

COUNTER GO-TO FUNCTION



Counter Go-To

Specify the desired counter number, and the tape will be fast-forwarded or rewound to that point for automatic playback.

1. Press GO-TO ㉚ in the Stop mode.
   - The counter will display the current position of the tape as calculated from the leader at the beginning of the tape.
2. Specify the counter number of the point you wish to locate, using the numeric keys ㉙ .
3. Press PLAY ③ .
   - The tape will be fast-forwarded or rewound depending on the relative position of the specified point, at which playback will start automatically.

Notes:
- If the recorder has not detected the leader tape since the tape was loaded, no number will be displayed when the GO-TO button is pressed, but after pressing the PLAY button, the tape will be rewound to the beginning (to enable counting from the leader) before fast-forwarding to the desired location.
- If the specified number exceeds the length of the tape, as calculated from the leader, the tape will fast-forward to the end, rewind to the beginning and then enter the Play mode.

NEXT-FUNCTION MEMORY

Memory Play function

- If you want to watch the tape from its beginning after rewinding, press REW and then PLAY within 2 seconds. Playback will start automatically at the beginning of the tape. (The TAPE MEMORY switch ⑥ must be in the OFF position.)
- If you want to watch the tape from the counter reading of "0000", set TAPE MEMORY to COUNTER, press REW (or FF) and then PLAY within 2 seconds.
- While the tape is being rewound, the PLAY indicator is blinking. To cancel the Memory Play mode and go to another mode, press the corresponding button (STOP, PLAY, FF, REW).

Memory Eject/Power-Off/Timer Standby

If you are going to eject the cassette, turn the power off or engage the Timer Standby mode after rewinding the tape, you do not have to wait for completion of rewind to press the corresponding button.

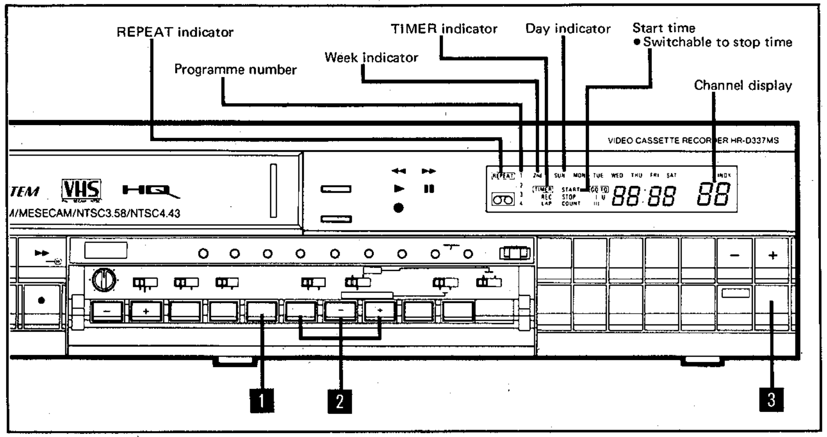
- To eject the cassette after rewind, peess REW and then EJECT within 2 seconds. (To cancel the Memory Eject mode, press STOP.)
- To turn the power off after rewind, press REW and then OPERATE within 2 seconds. (To cancel the Memory Power-off mode, press OPERATE.)
- To engage the Timer Standby mode after rewind, press REW and then TIMER within 2 seconds. (To cancel the Memory Timer Standby mode, press TIMER.)

Memory Play	REW/FF	→	PLAY	▶ PLAY	Blinking	→	Play mode
Memory Eject	REW	→	EJECT		Blinking	→	Cassette ejected
Memory Power-off	REW	→	OPERATE	OPERATE	Blinking	→	Power off
Memory Timer Standby	REW	→	TIMER	TIMER	Lights	→	Timer standby mode

within 2 seconds

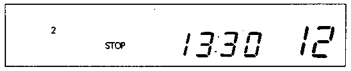
AUTOMATIC TIMER RECORDING

First of all, load a cassette (with safety tab in place); power will be switched on automatically.



1 Press PROG ㉓ .
- The display will change to the Timer Set mode for programme number "1". To advance to programme number 2, 3 or 4, press PROG.

2 Set the day, start time, channel and stop time in succession by using the SELECT and SET buttons ㉔ ㉕ alternately.
- Select the item to be set with the SELECT button; the selected item will blink.
- Set the desired data with the SET buttons.



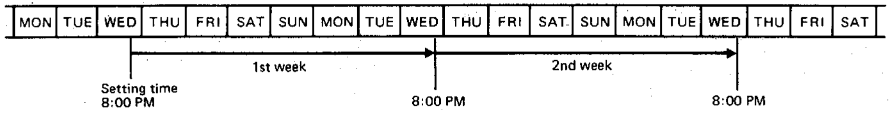
3 After making sure that the cassette is loaded, press TIMER ㉛ .
- The Timer Recording Standby mode will be engaged with the TIMER indicator and the preset programme number(s) illuminated and the power turned off.
- With no cassette loaded, the TIMER and "cassette loaded" indicators will continue blinking.
- A cassette whose safety tab has been removed will be ejected automatically.
- If a preset programme contains errors, that programme number will not be illuminated. Recheck the programmed data.
- If illuminated programme numbers are blinking, the time spans of those programmes overlap. Recheck their programmed data.

Setting the day
- With the SET "+" button, the day indication advances from "SUN" (first Sunday) to "SAT" (first Saturday), then "2nd SUN" (second Sunday) to "2nd SAT" (second Saturday) and then the all-days indication with "REPEAT" for daily serial recording.
- For weekly serial recording, press the REPEAT button any time in the Timer Set mode.
- The "REPEAT" entry can be cancelled by pressing the REPEAT button.

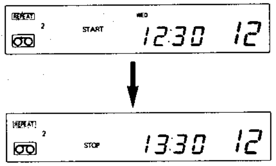
Setting the start and stop times
- It is not possible to set the start and stop times unless the clock has previously been set.
- Enter the data while the digits are blinking.
- The stop time can be set within 24 hours from the start time.

Cancelling the preset data
- The preset programmes can be cancelled. First engage the Timer Set mode for the programme number you wish to cancel and then press the CANCEL ㉗ button.

Note:
- The 1st week refers to the seven-day period from the present day and the 2nd week, to the following seven-day period (not weeks on the calendar). These two weeks are counted from the time of setting.



Reviewing the programmed data
- Press the PROG button in the Timer Standby mode; the programmed data of the earliest-to-start programme will be shown for 6 seconds (3 seconds for START and 3 seconds for STOP) and then those of subsequent programmes, if any, in the same manner.



- If you wish to change the programmed data, engage the Timer Set mode (first press the TIMER button to disengage the Timer Standby mode and then press the PROG button) and call up the corresponding programme number for reprogramming.

Timer recording operation
- When the preset start time is reached, recording starts.
- After timer recording, the power is switched off. If the tape end is reached during timer recording, the cassette is automatically ejected and the power is switched off.
- After all preset programmes have been executed, the Timer Standby mode is cancelled.

RECORDING FROM AN EXTERNAL SOURCE

By connecting an external video source (such as a VideoMovie camera-recorder, 2nd video recorder, video camera, etc.) to the VIDEO IN, AUDIO IN connectors, recording and/or editing are possible.
- For connection of these units, an appropriate cable is necessary.
- For connection of a video camera, a camera adapter is also necessary. Connect the camera adapter's PAUSE terminal to the recorder's PAUSE connector (54) , then you can control taping start/stop with the camera's start/stop switch. For proper connection of a camera, consult a JVC dealer.

1. Turn the power on for all connected equipment.
2. Adjust the TV receiver to your video channel.
3. Load a cassette.
4. Press either CH button ⑮ or the numeric key 0/AUX ㉙ to obtain "AU" in the channel display.
5. Set the TAPE SPEED switch ⑨ as required.
6. Operate the source equipment properly.
7. Press REC/ITR ⑲ .
8. To stop recording temporarily, press PAUSE/STILL ⑱ .
9. To end recording, press STOP ⑯ .

Note:
- For the operation of the source equipment, refer to the instruction manual of the relevant machine.

Confirm the signal system of the camera being used and set the colour system select switches correctly to suit the camera. (See page 10.)

IN CASE OF DIFFICULTY

What may initially appear to be trouble is not always a real problem. Make sure first . . . .

Symptoms	Check points
No power is applied to the recorder.	● Is the power cord disconnected? Connect it.
Playback picture does not appear while the tape is running.	● Is the TV receiver's channel selector set to the correct video channel? Set to the RF converter channel.
Picture is normal but no sound.	● Is the SYSTEM select switch set to the appropriate position?
Tape does not run in the Record mode.	● Is the PAUSE/STILL button pressed? Press PLAY to release.
REC/ITR button cannot be engaged.	● Is the cassette improperly loaded? Load it properly. ● Is the safety tab broken? Reseal the slot.
Tape stops in the Rewind or Fast Forward mode.	● Is the TAPE MEMORY switch set to COUNTER? Set to OFF.
Tape will not rewind.	● Is the tape already rewound to the end?
Noisy playback picture.	● Adjust with the TRACKING controls.
Pressing PAUSE/STILL during playback brings a still picture (in a frame-by-frame manner) with noise bars.	● Noise bars can be eliminated by pressing the PAUSE/STILL button a few more times.

This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the power off and unplug the power cord. Then plug it in again and check the functions.

HEAD CLEANING

- Picture playback may become blurred or interrupted while the TV programme received is clear. This does not mean that the recorded programme has been erased.
- Dirt accumulated on the video heads after long periods of use causes such problems. In this case, head cleaning requiring highly technical care is necessary.

For head cleaning, consult the nearest JVC dealer.

SECTION 1
MECHANISM ADJUSTMENT

1.1 GENERAL

1.1.1 Precautions

IMPORTANT:

1. Disconnect unit from power before removing or soldering components.
2. When removing a fastener (screw, washer, etc.), be careful not to drop it into the mechanism. If a fastener should be dropped, be sure to retrieve it.
3. The tape transport mechanism has been precisely adjusted at the factory and ordinarily does not require readjustment.
4. When removing a part, be very careful not to damage or displace other parts. (Be especially careful with the tape guides and rotary video head drum.)
5. For service procedures that call for operation of the set when the cassette housing is separated from the main-deck, perform as below.

1) Set a sheet of insulated material on the right of the chassis.
2) Remove the cassette housing from the main-deck and place it on the insulated sheet, but do not disconnect the connector from the MAIN PWB.
3) Insert a cassette into the cassette housing. The housing mechanism functions to retract the cassette.
4) Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
5) The desired modes can be obtained by using the operation switches.

1.1.2 Required test equipment, fixtures and tools

For proper mechanical adjustment, the following test equipment, fixtures and tools are strongly recommended. Without them, a long trial-and-error period would be necessary, resulting in possible damage. In addition, general-purpose tools are required.

1. Test equipment required:

Color television or monitor
Oscilloscope: Wide-band, dual trace, triggered, delayed sweep
Recording tape
Alignment tapes
Signal generator : PAL/SECAM/NTSC color bars, stairstep

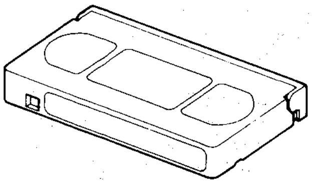
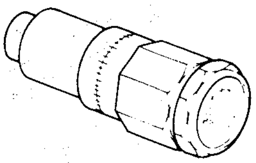
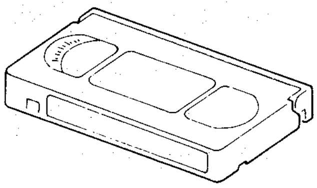
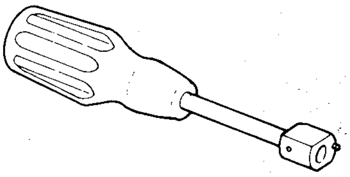
JVC alignment tape MH-2/MH-2L MH-1/MH-1L/MH-4 	Torque gauge assembly PUJ48075-2 (Torquemeter : 600ATG Torquemeterhead : PUJ48016-2) 	Back tension cassette gauge PUJ48076-2 
A/CTL head position tool PUJ47351-2 		

Table 1-1-1 Fixtures and tools

1.1.3 Disassembly (external covers)

1. Top cover
1) Take out five screws from the right, left and rear sides of the set.
2) Tilt up the rear end of the top cover, then remove the top cover.

2. Bottom cover
1) Take out five screws from the bottom side of the set.
2) Set free the bottom cover from six claws of the chassis in order to remove the bottom cover.
3. Front panel assembly
1) Remove the top cover.
2) Bend three upper hooks of the front panel assembly upward in order to disengage them from their chassis retainers.
3) Disengage three lower hooks of the front panel assembly from their chassis retainers in order to remove the front panel assembly from the chassis.

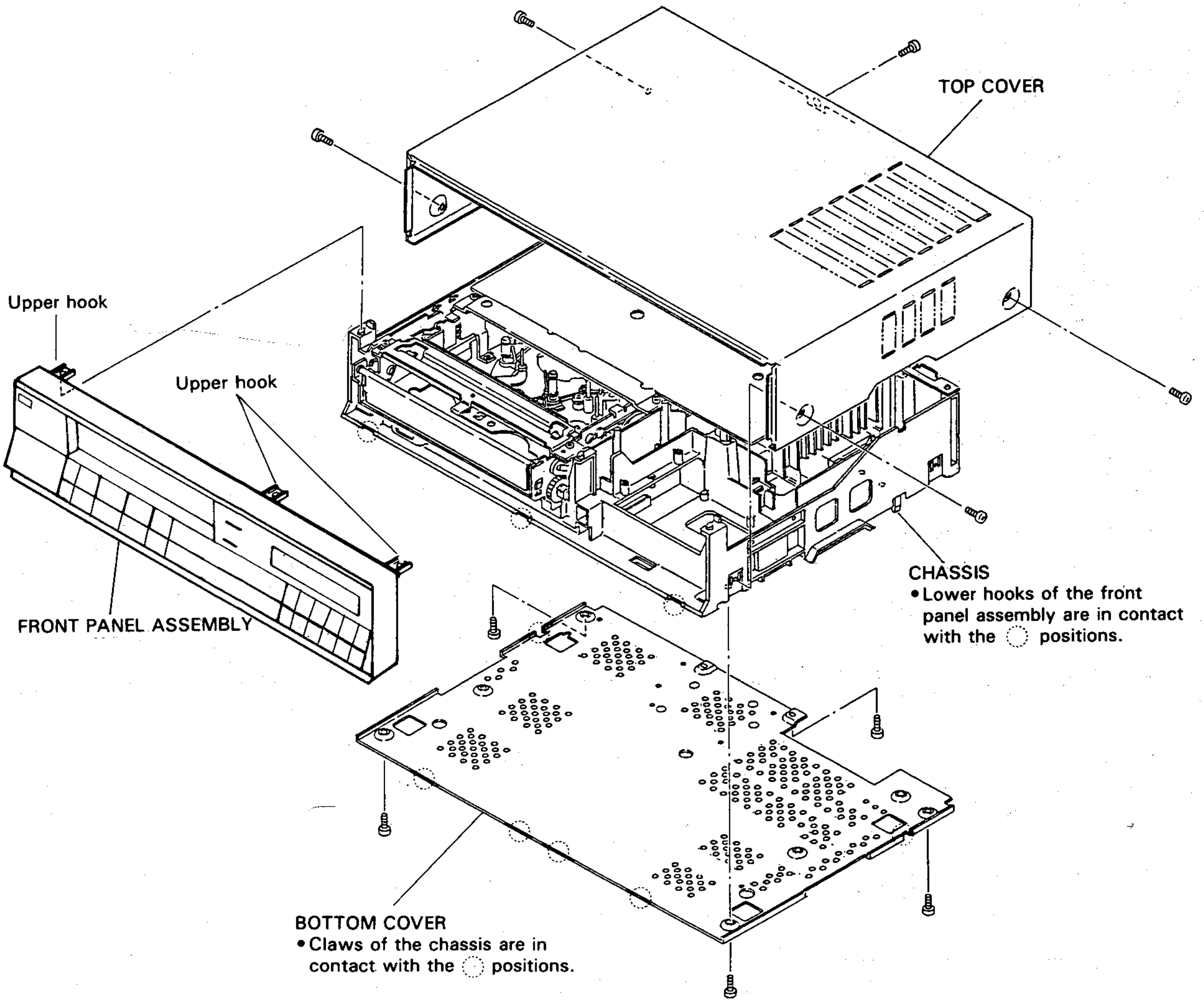

TOP COVER
Upper hook
Upper hook
FRONT PANEL ASSEMBLY
CHASSIS
• Lower hooks of the front panel assembly are in contact with the ⬚ positions.
BOTTOM COVER
• Claws of the chassis are in contact with the ⬚ positions.

Fig. 1-1-1 Removal of external covers

1.1.4 Layout of main parts

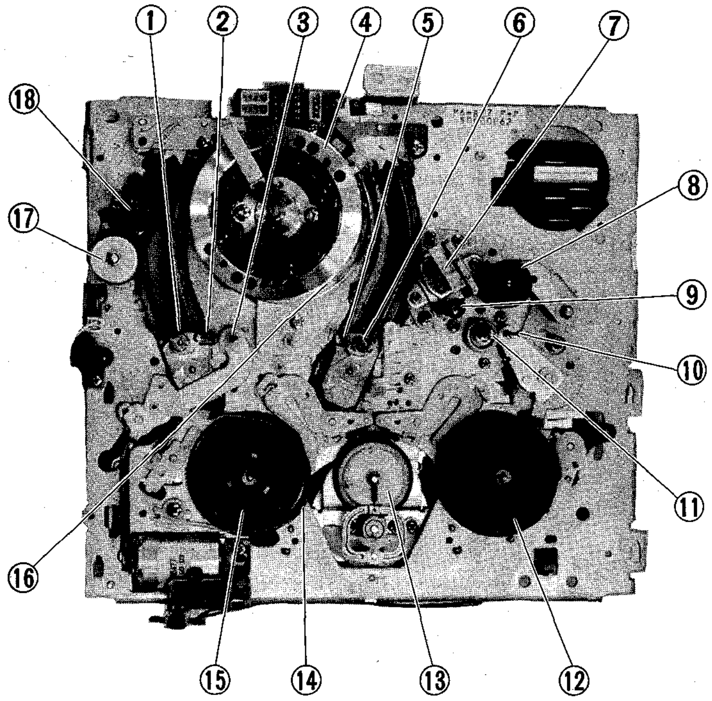


Fig. 1-1-2 Top view of main-deck

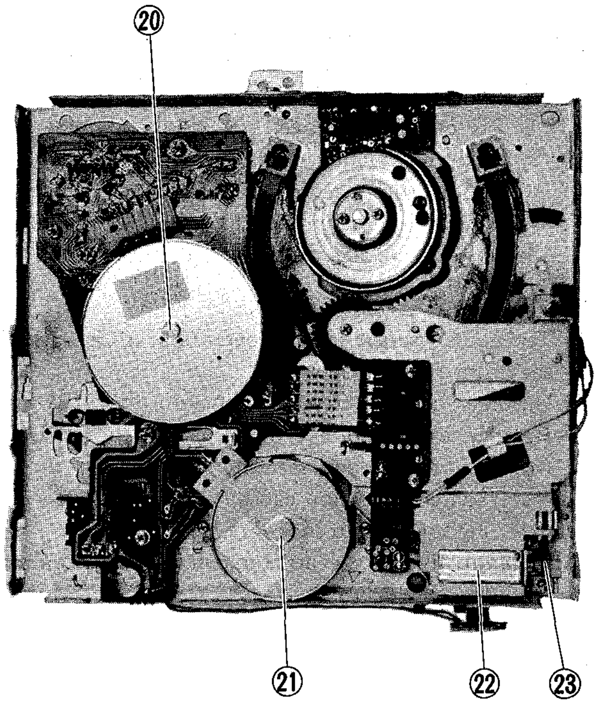


Fig. 1-1-3 Bottom view of main-deck

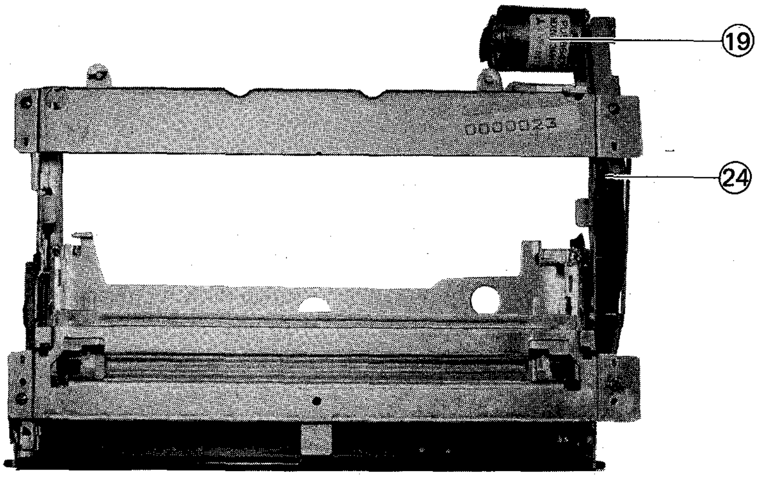


Fig. 1-1-4 Cassette housing

1. Supply guide roller
2. Supply slant pole
3. Tension pole
4. Upper drum
5. Take-up slant pole
6. Take-up guide roller
7. A/C head
8. Pinch roller
9. Take-up guide pole
10. Guide arm
11. Capstan
12. Take-up reel disk
13. Reel idler
14. Tension band
15. Supply reel disk
16. Lower drum
17. Impedance roller
18. Full erase head
19. Cassette motor
20. Capstan motor
21. Reel motor
22. Mode motor
23. Mode belt
24. Cassette belt

1.2 MAIN ASSEMBLY REPLACEMENT

1.2.1 Upper drum assembly

Notes: When handling and installing the upper drum assembly, avoid directly touching the head tips on the upper drum assembly.
For cleaning the head tips, push and hold a lint-free cloth or chamois dampened with alcohol to the upper drum assembly by the fingers, then turn the upper drum assembly clockwise. Do not clean the upper drum assembly with a vertical stroke.

1. Removal

1) Take out a screw and remove the brush assembly from the drum assembly.
2) Unsolder all soldered portions on the DRUM PWB. Remove excess solder, then remove the DRUM PWB from the upper drum assembly.
   Note: Soldered portion can be easily removed by removing solder with sucker or wick.
3) Take out two screws and remove the upper drum assembly upwards.

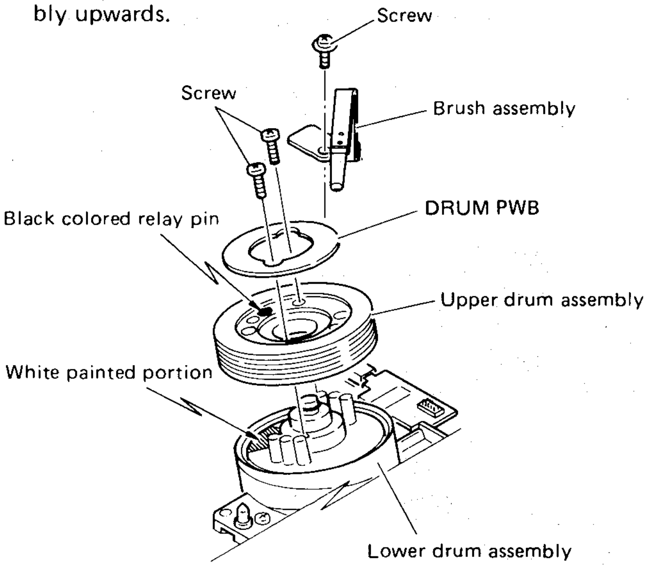


Fig. 1-2-1 Upper drum assembly

2. Installation

1) Install a new upper drum assembly so that the black-colored relay pin of the upper drum assembly overlies the white painted portion of the lower drum assembly, as shown in Fig. 1-2-1.
2) Tighten two screws in a balanced manner.
3) Set the DRUM PWB on the upper drum assembly, then resolder it.
4) Clean the drum unit (particularly clean the upper drum assembly).
5) Mount the brush assembly on the original position, then tighten a screw to fix the brush assembly.

3. Confirmation and adjustment

1) Perform the interchangeability confirmation. Refer to section 1.6.
2) Perform the PB switching point adjustment of the Servo (MAIN PWB) circuit. Refer to section 2.2.1.

1.2.2 A/C head (Audio/control head)

1. Removal

1) Disconnect connectors from the A/C HEAD PWB.
2) Take out two screws, then remove the A/C head and the head base together.
3) Unsolder and separate the A/C HEAD PWB from the A/C head.
4) Take out a screw and remove the shield cap from the A/C head.
5) Take out three screws and separate the A/C head from the head base. Use care regarding springs. Do not lose them.

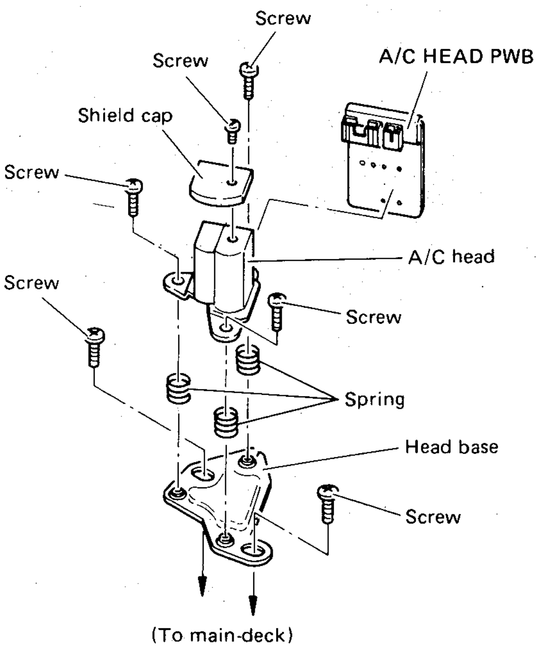


Fig. 1-2-2 A/C head

2. Installation

1) Mount a new A/C head and other peripheral parts on the main-deck by reversing the removal procedure.
2) Before installing the A/C head on the main-deck, perform rough-adjustment of A/C head height as shown in Fig. 1-2-3.

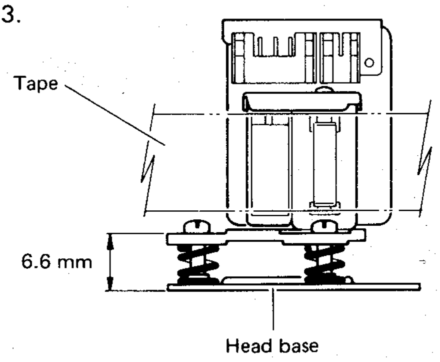


Fig. 1-2-3 A/C head height

3. Confirmation and adjustment

1) Use a recording tape and confirm correct tape transport operation, then perform interchangeability adjustment. Refer to sections 1.5 and 1.6.
2) Perform overall confirmation of the Audio circuit. Refer to section 2.4.

1.2.3 Tension band assembly

1. Removal
1) Take out a screw, then pry the A portion of the tension band assembly upwards to separate it from the tension arm assembly.

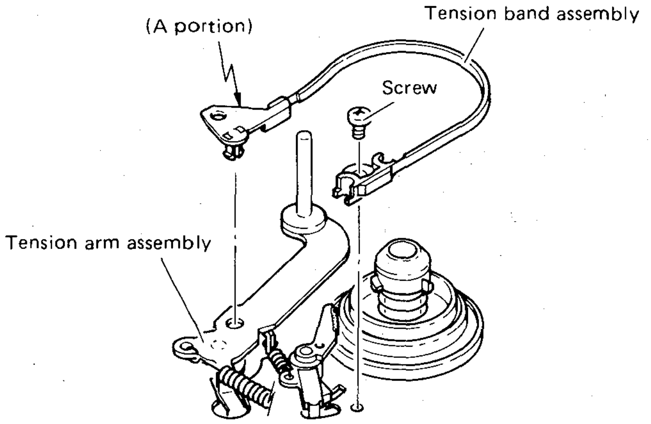

(A portion)
Tension band assembly
Screw
Tension arm assembly

Fig. 1-2-4 Tension band assembly

2. Installation
1) Install a new tension band assembly by reversing the removal procedure.

3. Confirmation and adjustment
1) Perform tension pole position adjustment. Refer to section 1.4.1.

1.3 ASSEMBLY PROCEDURE OF MECHANISM

The mechanism of this model is mostly engaged to the mechanism control circuit, through the mode select switch. Therefore, the relation between the mode select switch and the control arm decides all mechanical movement of the mechanical parts such as levers, gears, rollers and so on. If these parts are not properly positioned, the unit will be unloaded or compulsorily stopped. This will result in damage of mechanical or electrical parts.

1.3.1 Loading arm assembly

Loading arm assembly consists of loading gear, torsion spring and loading arm.

1. Set up the loading arm assembly correctly as shown in Fig. 1-3-1.

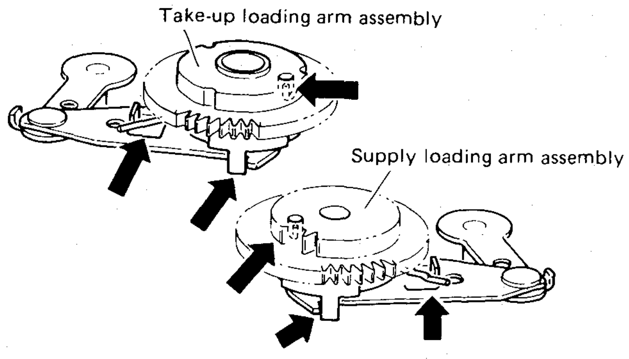

Take-up loading arm assembly
Supply loading arm assembly

Fig. 1-3-1 Loading arm assembly (1)

2. Install the take-up loading arm assembly and the supply loading arm assembly so that the holes on the loading gears face each other, as shown in Fig. 1-3-2. Do not move the loading arm assemblies from this position for the next step.

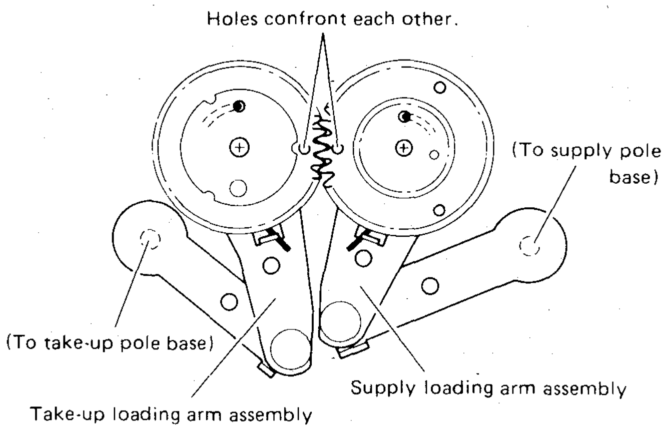

Holes confront each other.
(To supply pole base)
(To take-up pole base)
Supply loading arm assembly
Take-up loading arm assembly

Fig. 1-3-2 Loading arm assembly (2)

1.3.2 Control cam

1. Set the arm gear assembly on the cam bracket assembly so that the hole of the arm gear assembly overlaps the hole of the cam bracket assembly.
2. Install the control cam on the cam bracket assembly so that the hole of the control cam overlaps the hole which is indicated in the step 1), as shown in Fig. 1-3-3. Do not turn the control cam from this position for the next step.

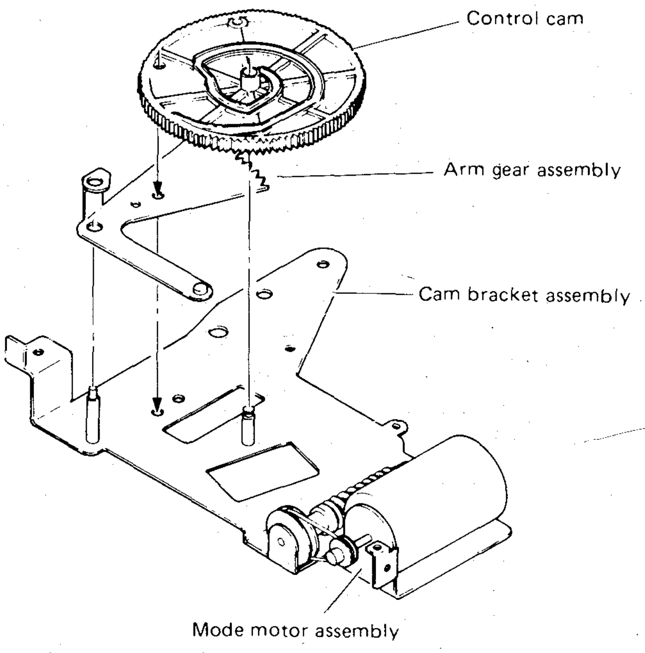

Control cam
Arm gear assembly
Cam bracket assembly
Mode motor assembly

Fig. 1-3-3 Control cam

1.3.3 Cam bracket assembly

1. Push and hold the plate assembly so that the hole of the plate assembly overlaps the hole of the main-deck, as shown in Fig. 1-3-4.
2. Then mount the cam bracket assembly.

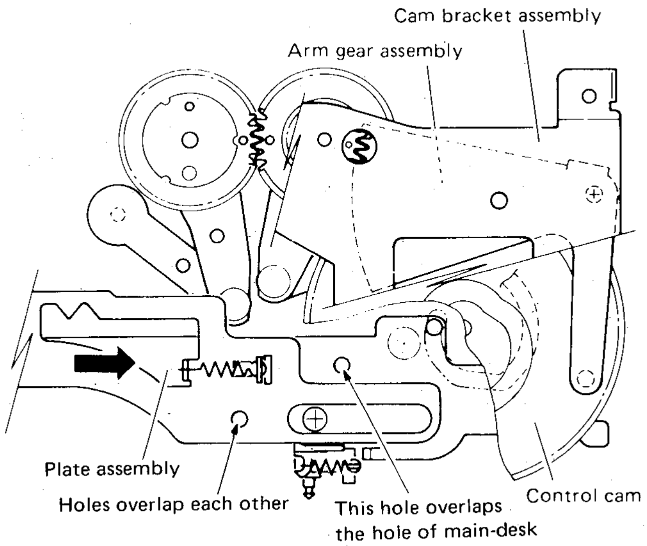

Cam bracket assembly
Arm gear assembly
Plate assembly
Holes overlap each other
This hole overlaps the hole of main-desk
Control cam

Fig. 1-3-4 Cam bracket assembly

Note: In order to overlap the holes turn the control cam fully counter clockwise by turning the mode motor with a finger.

1.3.4 Mode select switch

1. When the hole of the plate assembly overlaps the hole of main-desk, refer to Fig.1-3-4, confirm that the V-cut of the slider section just overlaps the V-cut of the outer section of the mode select switch.
2. If a difference of more than 0.5 mm is noticed, adjust the mode select switch to the correct position, after unsoldering and loosening the screw.

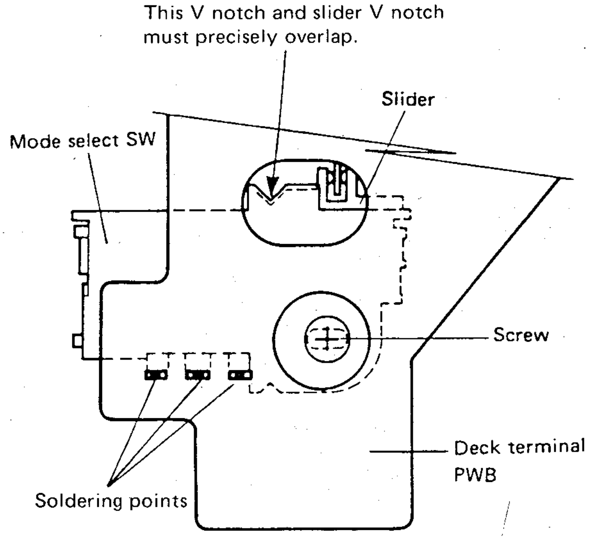

This V notch and slider V notch must precisely overlap.
Slider
Mode select SW
Screw
Deck terminal PWB
Soldering points

Fig. 1-3-5 Mode select switch

1.4 CONFIRMATION AND ADJUSTMENT

1.4.1 Tension pole position adjustment

1. Without loading a tape, set for the Play mode.
2. Loosen screw a little bit, then adjust the tension band holder so that the distance, shown in Fig. 1-4-1, becomes zero (0 mm).
3. Tighten screw to fix the tension band holder.

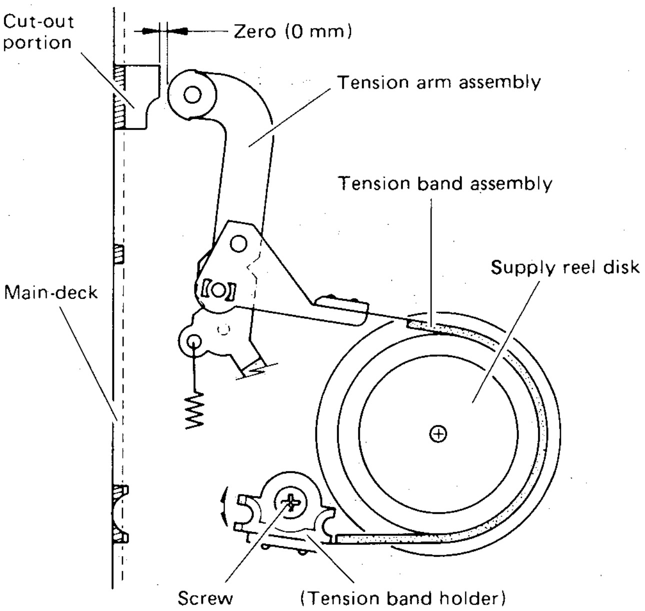

Cut-out portion
Zero (0 mm)
Tension arm assembly
Tension band assembly
Supply reel disk
Main-deck
Screw
(Tension band holder)

Fig. 1-4-1 Tension pole position

Note: By this adjustment, back tension is within normal specification, in spite of parts tolerances.

4. Use the back tension cassette gauge and set for the Play mode.
5. Confirm that the indication is between 25 – 75.

1.4.2 Take-up torque confirmation

1. Set the Play mode without the cassette housing assembly.
2. Set the torque gauge on the take-up reel disk.
3. The torque gauge consists of upper and lower sections connected by a spring mechanism. Relax the grip on the torque gauge so that the indicator needle and scale rotate at equal speed, then read the indication. The correct value is between 45 – 155.
4. If necessary, replace the take-up and supply clutches.

1.5 TAPE TRANSPORT SYSTEM CONFIRMATION AND ADJUSTMENT

Once adjusted to the complete condition, readjustment of the tape transport system is not necessary, except when the parts that compose the tape transport system are replaced due to troubles by long usage or unexpected accidents.

1.5.1 Tape transport system adjustment

1. Guide roller

   To get the FM envelope into ideal shape for interchangeability, the height adjustment of the guide roller is needed.

   Before turning the guide roller, slightly loosen the setscrew located under the guide roller. For loosening the setscrew, use the hex key (1.25 mm).

   Note: Loosen the setscrew enough to allow the guide roller to be turned. If excessively loose, tape motion may turn the guide roller inadvertently.

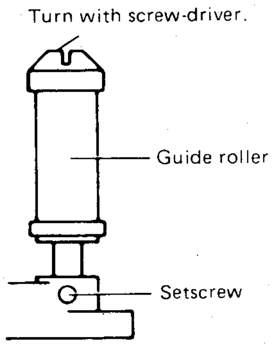

Turn with screw-driver.
Guide roller
Setscrew

Fig. 1-5-1 Guide roller

2. Impedance roller

   Normally, do not adjust the height of the impedance roller. Only when the defects of tape travel are noted at the impedance roller, after complete adjustment for interchangeability, adjust the height of impedance roller to obtain smooth tape travel. For adjustment of impedance roller height, use the nut-driver (5.5 mm).

   Note: Do not lower the impedance roller excessively to avoid the defects of tape travel. Tape must be along the lower flange located under the impedance roller.

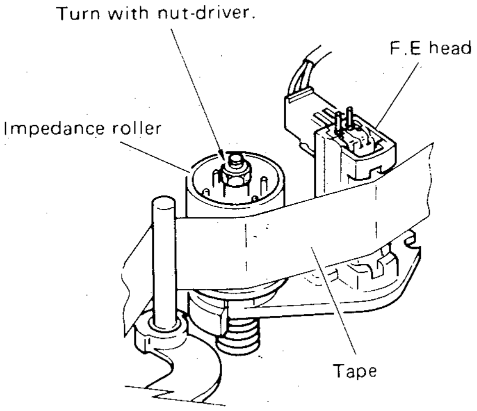

Turn with nut-driver.
F.E head
Impedance roller
Tape

Fig. 1-5-2 Impedance roller

3. A/C head (audio/control head)

   When defects of tape travel are noted at the take-up guide pole, adjust the inclination of A/C head to obtain smooth tape travel.

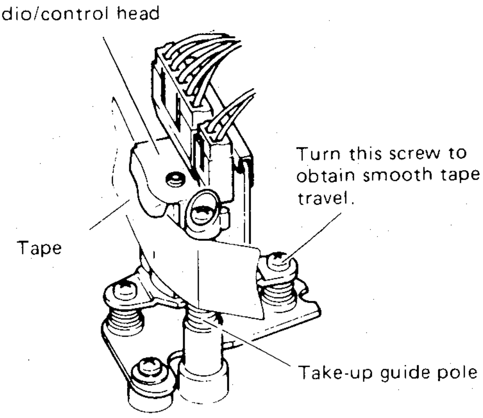

Audio/control head
Turn this screw to obtain smooth tape travel.
Tape
Take-up guide pole

Fig. 1-5-3 A/C head

1.6 INTERCHANGEABILITY CONFIRMATION AND ADJUSTMENT

Before using an alignment tape, use a recording tape and confirm correct tape transport operation.
For the FM envelope output, connect an oscilloscope to TP6 of the PRE/REC. For audio output, connect to the AUDIO OUT terminal, and trigger the oscilloscope externally with the signal from TP11 of the SERVO PWB. Use only the stairstep segment of the alignment tape, do not use another segment for interchangeability.

1.6.1 FM envelope confirmation and adjustment

1. Push the TRACKING +/– buttons to obtain the maximum FM envelope output corresponding to (a) level in Fig. 1-6-1. Observe the FM envelope, read the maximum level (a) and the minimum levels (b), (c) and (d).
   Confirm that:

$$\frac{b}{a} \geq 0.7 , \frac{c}{a} \geq 0.5 \text{ and } \frac{d}{a} \geq 0.5$$

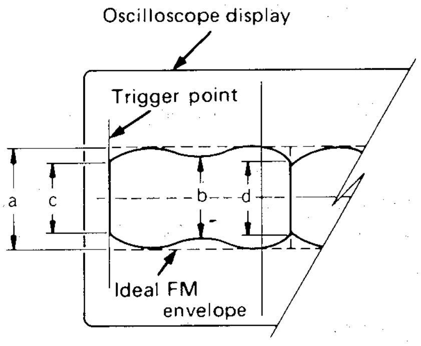


Fig. 1-6-1 FM envelope

2. If defects are noted, following adjustments are required.

1) Observe the oscilloscope display and push the TRACKING +/– buttons to vary the FM output from maximum to minimum.
2) If the variation is not parallel at the rising portion (drum entrance) of the FM envelope, turn the supply guide roller so that the rising portion of the envelope becomes nearly flat, as shown in Fig. 1-6-2.

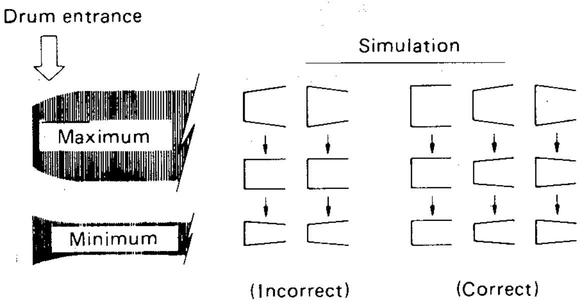


Fig. 1-6-2 Drum entrance

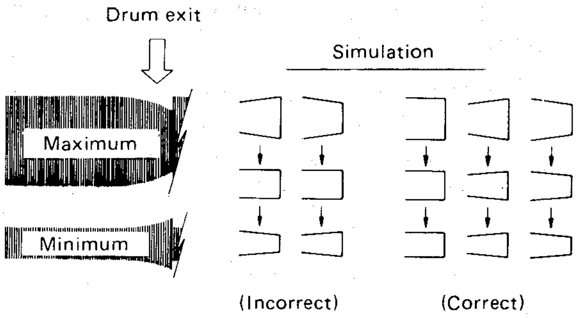


Fig. 1-6-3 Drum exit

3) In the same manner as for the rising portion, turn the take-up guide roller to adjust the falling portion (drum exit) of the FM envelope. See Fig. 1-6-3.
4) In addition to observing the envelope, confirm absence of tape curling or wrinkling at the impedance roller and take-up guide pole. If it occurs at the impedance roller, adjust the impedance roller height. If it occurs at the take-up guide pole, adjust the A/C head inclination.
5) Vary the FM envelope output level and perform fine adjustments of the guide rollers.

1.6.2 A/C head height and azimuth adjustments

Incorrect A/C head height can impair audio signal-to-noise ratio when playing back a pre-recorded tape.

1. For A/C head inclination, adjust screw (A) so that small tape wrinkles are not produced at the take-up guide pole. Turn screw (A) clockwise so that the tape wrinkles are apparent with the lower flange of the take-up guide pole, then turn screw (A) counter-clockwise so that the wrinkles smooth out.
2. Adjust azimuth with screw (B).
   Turn screw (B) to obtain maximum audio output.
3. For A/C head height, turn screws (A), (B) and (C) in succession by small and equal increments at a time and adjust for maximum audio output level.

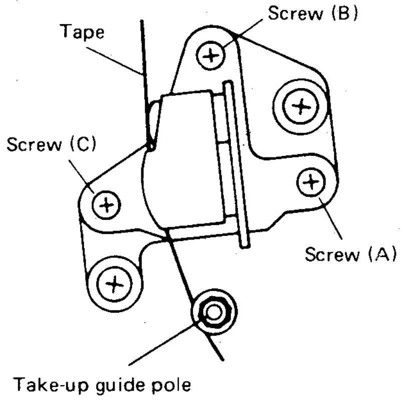


Fig. 1-6-4 A/C head

1.6.3 Control head phase adjustment

1. Set Tracking to Pre-Set Position by pushing both + button and – button at the same time.
2. Loosen screws (D) and (E) a little bit, then cover screw (D) with the A/CTL head position tool and set the pin of the tool into the hole next to screw (D).
3. Turn the tool counter-clockwise to shift the A/C head fully in the direction of the capstan, and then gradually turn the tool clockwise and observe the FM envelope output.
4. Set the A/C head at the point of the first output peak.

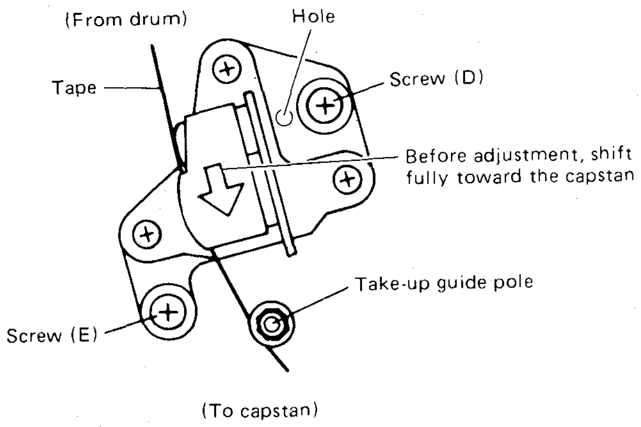


Fig. 1-6-5 Control head phase

1.6.4 Setscrew tightening

1. After confirming absence of tape wrinkling and other transport irregularities, tighten the setscrews located under the guide rollers while in the Stop mode.
   Note: Since the guide rollers are easily moved, use care when tightening.
2. Again perform the FM envelope confirmation.

1.6.5 Final confirmation

1. Supply a video signal and perform recording, then play back.
   Confirm that the FM envelope satisfies the specifications during playback of alignment tape MH-2.
2. Perform the PB switching point adjustment of the Servo circuit. Refer to section 2.2.1.
3. Perform the audio PB level adjustment of the Audio circuit. Refer to section 2.4.2.
4. Perform overall confirmation of the Video circuit. Refer to section 2.3.

SECTION 2
ELECTRICAL ADJUSTMENTS

2.1 PREPARATION

Electrical adjustments are required after replacing circuit components and certain mechanical parts.
It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

2.1.1 Required test equipment

1. Color television or monitor
2. Oscilloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Audio oscillator
5. Audio voltmeter
6. Digital voltmeter
7. Signal generator: RF/IF sweep/marker
8. Signal generator: NTSC/PAL/SECAM color bar, stairstep
9. Recording tape
10. Alignment tapes: MH-1, MH-1L, MH-2, MH-2L, MH-4

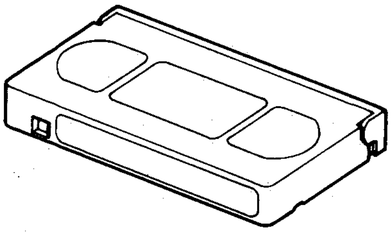


Fig. 2-1-1 Tape

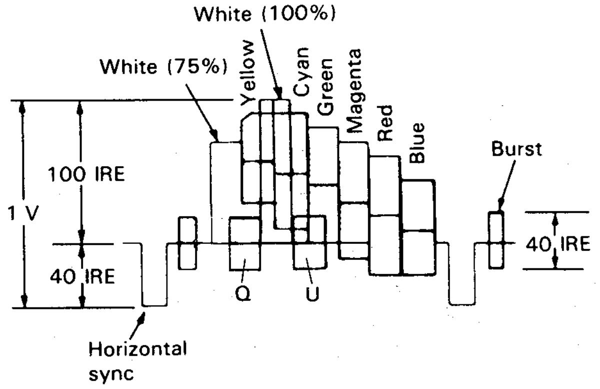

White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst
100 IRE
1 V
40 IRE
40 IRE
Q
U
Horizontal sync

Fig. 2-1-2 Color bar signal waveform

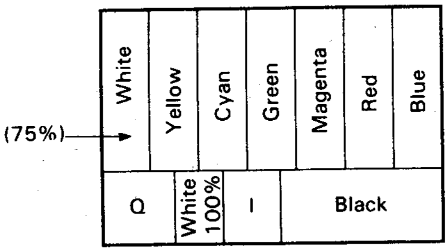
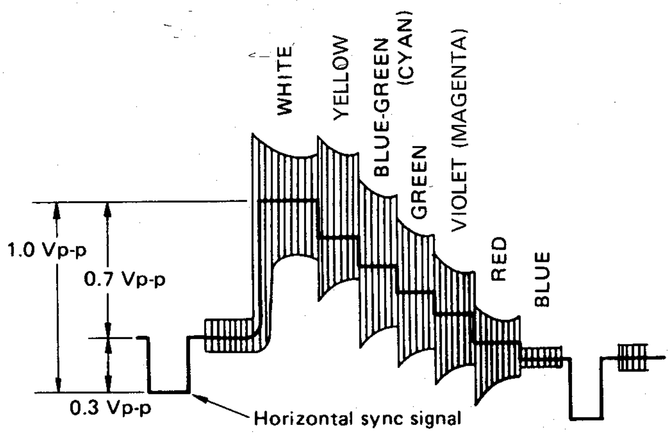
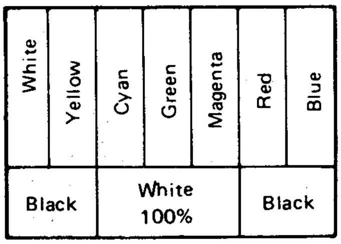

White
Yellow
Cyan
Green
Magenta
Red
Blue
(75%)
Q
White 100%
I
Black

Fig. 2-1-3 PAL/NTSC color bar pattern


WHITE
YELLOW
BLUE-GREEN (CYAN)
GREEN
VIOLET (MAGENTA)
RED
BLUE
1.0 Vp-p
0.7 Vp-p
0.3 Vp-p
Horizontal sync signal

Color bar signal waveform


White
Yellow
Cyan
Green
Magenta
Red
Blue
Black
White 100%
Black

Color bar pattern

Fig. 2-1-4 SECAM color bar

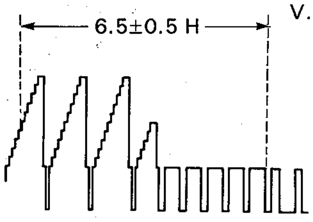
2.2 TIMER CIRCUIT (20 TIMER Board)

Note: Unless otherwise specified, test points and variable resistors are located on the TIMER board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Timer clock	TP2	C101	E-E mode	1) Connect a frequency counter to Pin 16 of IC1 and TP3 (GND). 2) Short TP1 to ground. 3) Reset the CPU by briefly shorting both leads of C10. 4) Adjust C12 for 2,048.000±0.002 Hz. **Note:** Adjust period T for the following value: T=488.2813±0.005 μs

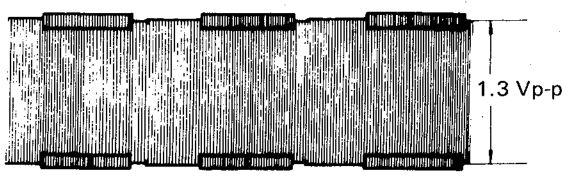
2.3 SERVO CIRCUIT (48 SERVO Board)

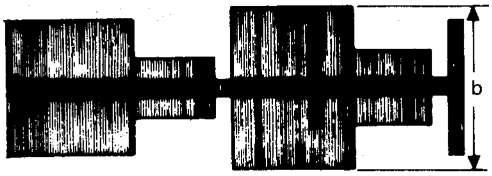
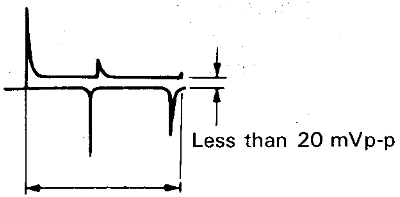
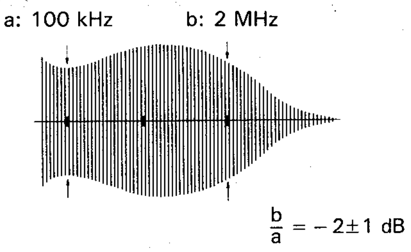
Note: Unless otherwise specified, test points and variable resistors are located on the MAIN board.

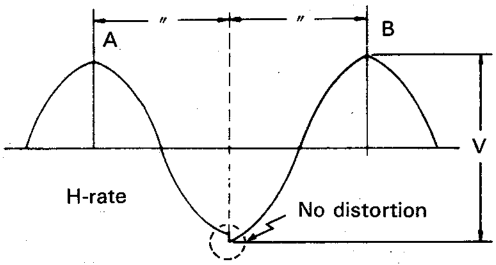
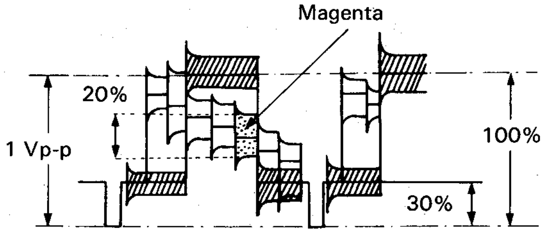
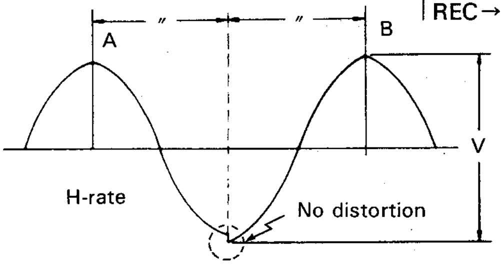
No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	PB switching point	TP11  Fig. 2-3-1	R4 (PAL) R45 (NTSC)		1) Connect an oscilloscope to VIDEO OUT. Trigger the oscilloscope externally with the signal from TP11. 2) Play color bar signal of the MH-2 alignment tape. 3) Adjust R4 for 6.5±0.5 H. 4) Confirm difference within 1 H between + (plus) and – (minus) slopes. 5) In the same manner, play back MH-1 alignment tape and adjust R45 for NTSC.

2.4 VIDEO CIRCUIT (03 MAIN Board)

Note: Unless otherwise specified, test points and variable resistors are located on the MAIN board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Head Q	TP3, TP4, TP6 (PRE/REC)	R32, R33 (PRE/REC)	LP mode PB without tape	1) Insert a cassette from which tape is absent and set for the LP Play mode. 2) Connect the oscilloscope to TP6 of the PRE/REC board. 3) Supply a sweep signal to TP3 of the PRE/REC board. 4) Adjust R32 to equalize the 1 MHz and 5 MHz levels. 5) In the same manner, apply the sweep signal to TP4 and adjust R33.
2	VXO	TP309	R328	E-E PAL mode	1) Connect a frequency counter to TP309. 2) Adjust R328 for 4.433619 MHz±50 Hz.
3	REC FM level	TP3 (PRE/REC)  Fig. 2-4-1	R204	LP-PAL mode	1) Set for the PAL, LP mode and supply a PAL color bar signal input. 2) Connect the oscilloscope to TP3 of the PRE/REC board. 3) Record the PAL color bar. 4) Adjust the REC FM waveform for 1.3 Vp-p with R204.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
4	SP REC color level	TP307	R639	SP-PAL mode MH-2 REC then PB  Fig. 2-4-2	1) Play color bar signal of the MH-2 alignment tape. 2) Measure the color level at TP307. 3) Use a spare tape and record a color bar signal. Play it back and measure the color level at TP307. 4) Adjust R639 for 100%±5% color level between the alignment tape playback and the recorded signal playback. **Note:** Confirm CH1 and CH2 level difference within 3 dB.
5	LP REC color level	TP307	R640	LP PAL mode MH-2L REC then PB	1) Repeat the above using the LP mode and the MH-2L alignment tape. 2) Adjust R640 for 90%±5% color level. **Note:** Confirm CH1 and CH2 level difference within 3 dB.
6	Noise cancel	TP121	R112 (PAL) R509 (NTSC)	MH-2 PB MH-1 PB  Fig. 2-4-3	1) Play color bar signal of MH-2 alignment tape. 2) Connect the oscilloscope to TP121. 3) Adjust R112 for less than 20 mVp-p noise level. 4) In the same manner, play back NTSC color bar signal of MH-1. 5) Adjust R509 for less than 20 mVp-p.
7	Delay color level	TP416 TP408	R432	LP	1) Record and playback PAL color bar signal in the LP mode. 2) Adjust R432 for equal color level at TP416 and TP408.
8	0.5 H delay video level	TP218 TP231	R223	E-E mode	1) Supply a PAL color bar signal input and set for the EE mode. 2) Adjust R223 for equal Y signal level at TP218 and TP231.
9	Jump detect	TP423	R410 (Jumper detect PWB)	E-E mode	1) Connect a jumper wire between TP433 and TP434. 2) Connect a frequency counter to TP432. 3) Adjust R410 for 30.0±0.2 kHz.
10	Video frequency response	VIDEO OUT	R515	SP PAL mode Video sweep  $\frac{b}{a} = -2 \pm 1$ dB Fig. 2-4-4	1) Record and play back the video sweep signal. 2) Adjust R515 to set the 2 MHz marker to −2±1 dB.
		VIDEO OUT	R517	LP PAL Video sweep	3) Adjust R517 to set same condition as above.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
11	MESECAM DET. (1)  Set this point to center position between points "A" and "B". Fig. 2-4-5	TP314	L351 R355	AUTO mode SECAM Color bar E-E	1) Connect the oscilloscope to TP314. 2) As indicated in the figure, adjust R355 for more than 6.5 Vp-p without waveform distortion. 3) Adjust L351 for maximum waveform. **Note:** Confirm more than 6.0 Vp-p during recording.
12	SECAM SP REC color level  SECAM signal for reference Fig. 2-4-6	TP207 (Color PWB)	R452 (MAIN PWB)	Color bar (SECAM) REC→PB	1) Play color bar signal of MH-4 Alignment tape. 2) Connect oscilloscope to TP207 and measure the color level. 3) Record and playback color bar signal. 4) Again measure the TP207 signal. Adjust R452 to obtain 140±5% of that from the Alignment tape.
13	SECAM LP REC color level	TP207 (Color PWB)	R430 (MAIN PWB)	Color bar (SECAM) REC→PB	1) On the SERVO board, short TP4 and GND. 2) Play color bar signal of MH-4 Alignment tape. 3) Measure the color level at TP207. 4) Disconnect short from TP4. Record and playback color bar signal in LP mode. 5) Again measure the TP207 color level. Adjust R430 to obtain 110%±5% of that from the Alignment tape.
14	SECAM detector  Set this point to center position between points "A" and "B". Fig. 2-4-7	TP214	R255 L251	Color bar (SECAM) E-E REC→PB	1) In the EE mode, adjust L251 to obtain the waveform shown in the figure at TP214. 2) Record and playback color bar signal. Adjust R255 for 6.0±0.5 Vp-p at TP214. Confirm more than 4.0 Vp-p during recording.
15	NTSC SP REC color level	TP107 (Color PWB)	R655 (Color PWB)	MH-1L Color bar REC→PB	1) Play color bar signal of MH-1 Alignment tape. 2) Connect oscilloscope to TP107 and measure the color level. 3) Record and playback color bar signal. Again measure the color level at TP107. 4) Adjust R655 for 95±5% of the color level obtained from the Alignment tape.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
16	NTSC EP REC color level	TP107 (Color PWB)	R656 (Color PWB)	MH-1L Color bar REC→PB	1) Play color bar signal of MH-1L Alignment tape. 2) Connect oscilloscope to TP107 and measure the color level. 3) Record and playback color bar signal in EP mode. Again measure the color level at TP107. 4) Adjust R656 for 90±5% of the color level obtained from the Alignment tape. Confirm channel difference within 4 dB.

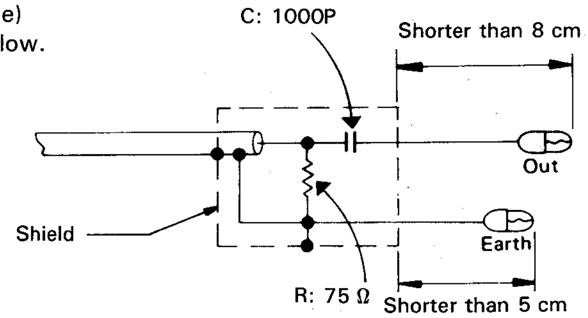
2.5 AUDIO CIRCUIT ($\boxed{0}\boxed{3}$ MAIN Board)

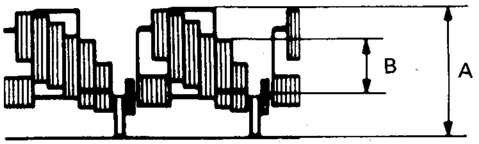
Note: Unless otherwise specified, all test points and adjustments are located on the MAIN board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Bias voltage	TP31 TP32	R42	REC	1) Without connecting the input and output terminals, set the input selector switch to AUX. 2) Set for the Recording mode and use a voltmeter to measure the voltage between TP31 and TP32. 3) Adjust R42 to obtain 19 mVrms.

2.6 IF CIRCUIT ($\boxed{0}\boxed{7}$ IF Board)

Note: Unless otherwise specified, all test points and adjustments are located on the IF board.

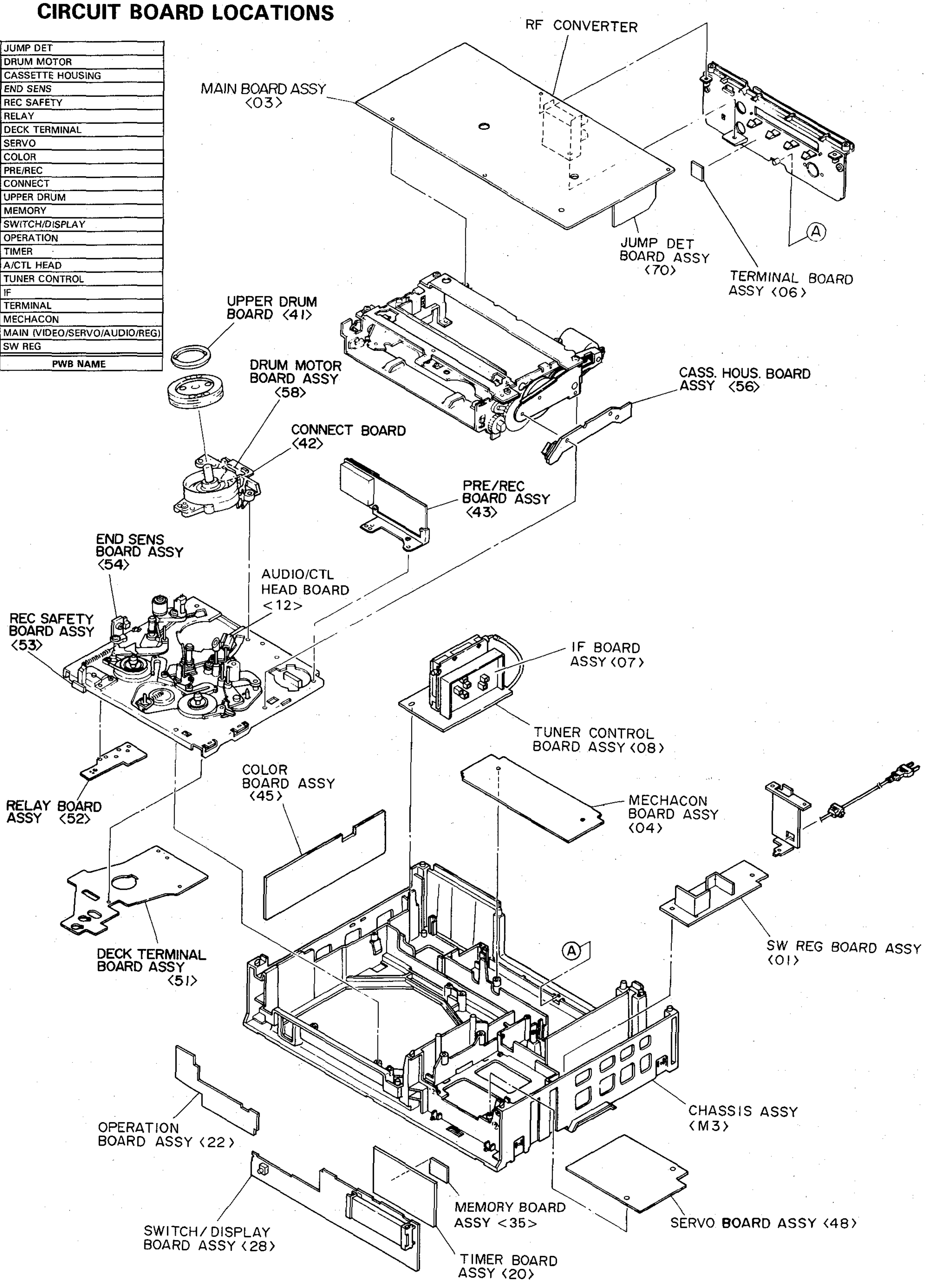
No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
• **Equipment required** 1. Oscilloscope 2. IF sweep signal generator with suitable markers (PIF, SIF, etc.) 3. DC power supplies—for power bias (12.0 V) for IF AGC bias (approx. 5 V variable) 4. Sweeper probe (sweep signal supply cable) as shown below.  C: 1000P Shorter than 8 cm Out Shield Earth R: 75 Ω Shorter than 5 cm **Fig. 2-6-1** Sweep Probe					
1	LLD coil	Video DET Out	T4	Sweep generator	1) Apply sweep signal to pin 5 of IC1. 2) Apply DC voltage to IC1 pin 2 so that 1 Vp-p is obtained from pin 18. 3) Adjust T4 for maximum 38.9 MHz marker.
2	AFC	Video DET Out	T3	Sweep generator	1) Apply sweep signal to pin 5 of IC1. 2) Apply DC voltage to IC1 pin 2 for maximum output from pin 13. 3) Adjust T3 to set the 38.9 MHz marker to 4.5 V.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
3	Sound trap	Base of Q1	T1	Sweep generator	1) Apply sweep signal to pin 2 of JP1. 2) Apply DC 12 V to IC3 pin 13. 3) Connect the oscilloscope to the base of Q1. 4) Adjust T1 for minimum 34.4 MHz marker.
4	Color level  B: magenta A:B = 1:0.48 PAL signal **Fig. 2-6-2**	Video out CN1-1	R57	Signal GEN	1) Receive a color bar signal. 2) As indicated in the figure, adjust R57 for 54% magenta level.
5	AGC	JP1, 2 Pin	R11	Broadcast	1) Turn R11 for maximum level at the front end IF terminal. 2) Then adjust R11 for 7 dB less than the maximum value.

SECTION 3
CHARTS AND DIAGRAMS

3.1 CIRCUIT BOARD LOCATIONS

NO.	PWB NAME
70	JUMP DET
58	DRUM MOTOR
56	CASSETTE HOUSING
54	END SENS
53	REC SAFETY
52	RELAY
51	DECK TERMINAL
48	SERVO
45	COLOR
43	PRE/REC
42	CONNECT
41	UPPER DRUM
35	MEMORY
28	SWITCH/DISPLAY
22	OPERATION
20	TIMER
12	A/CTL HEAD
08	TUNER CONTROL
07	IF
06	TERMINAL
04	MECHACON
03	MAIN (VIDEO/SERVO/AUDIO/REG)
01	SW REG

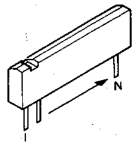
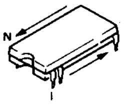
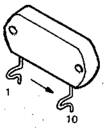
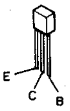
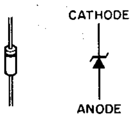
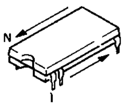
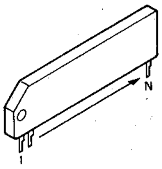
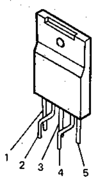
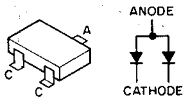
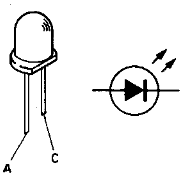
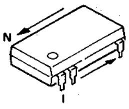
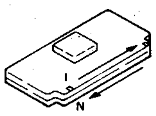
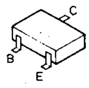
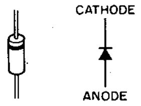
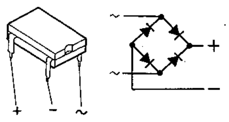

RF CONVERTER
MAIN BOARD ASSY <03>
JUMP DET BOARD ASSY <70>
TERMINAL BOARD ASSY <06>
Ⓐ
UPPER DRUM BOARD <41>
DRUM MOTOR BOARD ASSY <58>
CASS. HOUS. BOARD ASSY <56>
CONNECT BOARD <42>
PRE/REC BOARD ASSY <43>
END SENS BOARD ASSY <54>
AUDIO/CTL HEAD BOARD <12>
REC SAFETY BOARD ASSY <53>
IF BOARD ASSY <07>
TUNER CONTROL BOARD ASSY <08>
COLOR BOARD ASSY <45>
MECHACON BOARD ASSY <04>
RELAY BOARD ASSY <52>
SW REG BOARD ASSY <01>
DECK TERMINAL BOARD ASSY <51>
Ⓐ
CHASSIS ASSY <M3>
OPERATION BOARD ASSY <22>
MEMORY BOARD ASSY <35>
SERVO BOARD ASSY <48>
SWITCH/DISPLAY BOARD ASSY <28>
TIMER BOARD ASSY <20>

3.2 MAIN TYPES OF ACTIVE AND PACKAGE CIRCUITS

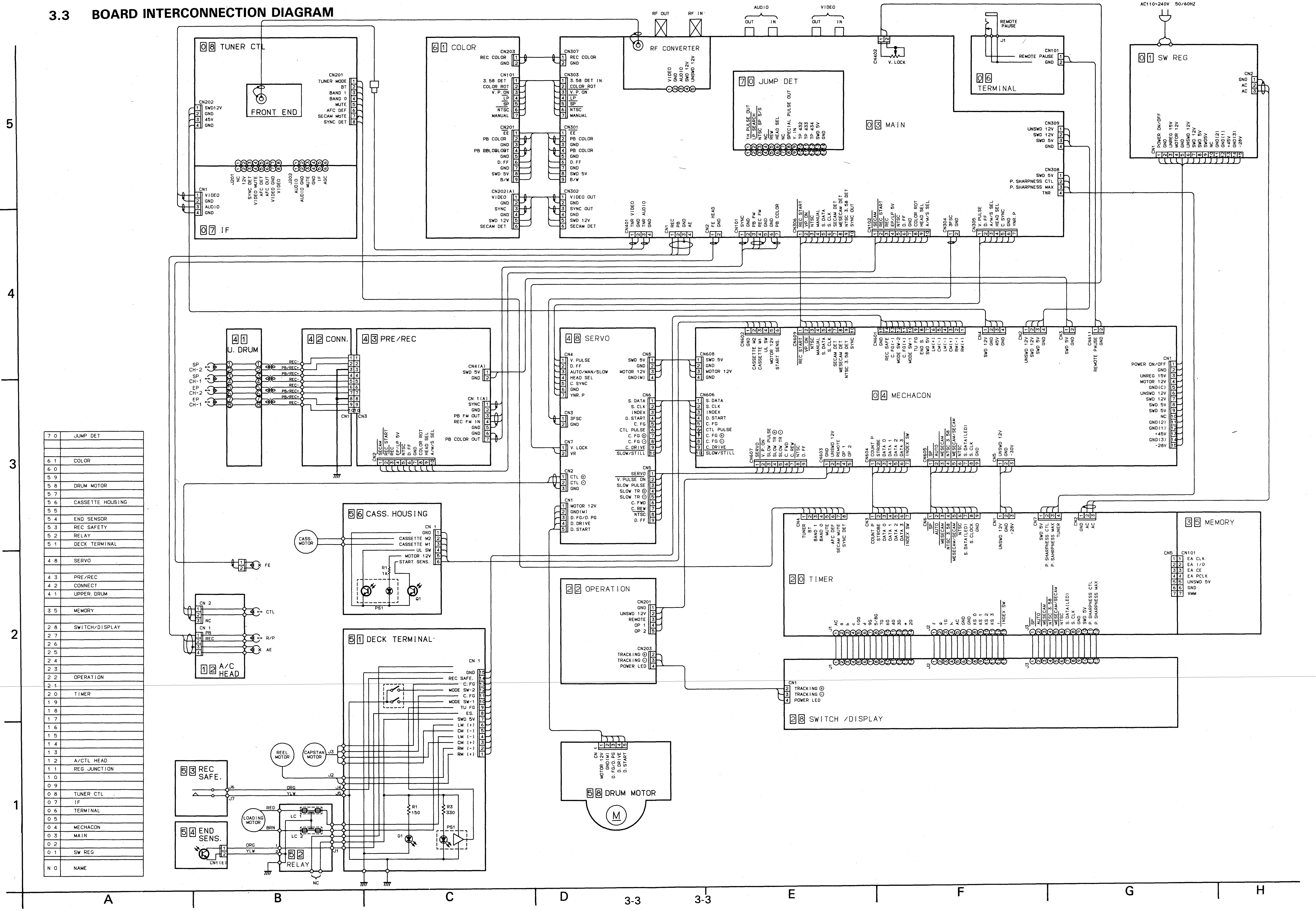
INTEGRATED CIRCUIT	
NAME	**L**
BA6222	1A
BA6259N	1A
BU4069UB	2A
HA118019NT	3A
HD49722NT	3A
M50965-358SP	1B
NJM2233AS	2B
NJM2234S	2B
PB20166F	3B
STK5474	1C
STR-D1760-F	2C
UPD75212ACW-014	1B

TRANSISTOR	
NAME	**L**
DTA114EU	3C
DTA114TS	1D
DTC144ES	1D
DTC144EU	3C
DTC144WU	3C
DTD114ES	1D
2SA1532(C)	3C
2SA1576(RS)	3C
2SC4081(RS)	3C

DIODE	
NAME	**L**
DAN202U	2D
HVP21-01S4A	3D
RD4.7ES-T1B3	1E
SLH-56DC3F	2E
S1WB(A)60	3E

	A	B	C	D	E
1					 CATHODE ANODE
2				 ANODE A C C CATHODE	
3				 CATHODE ANODE	

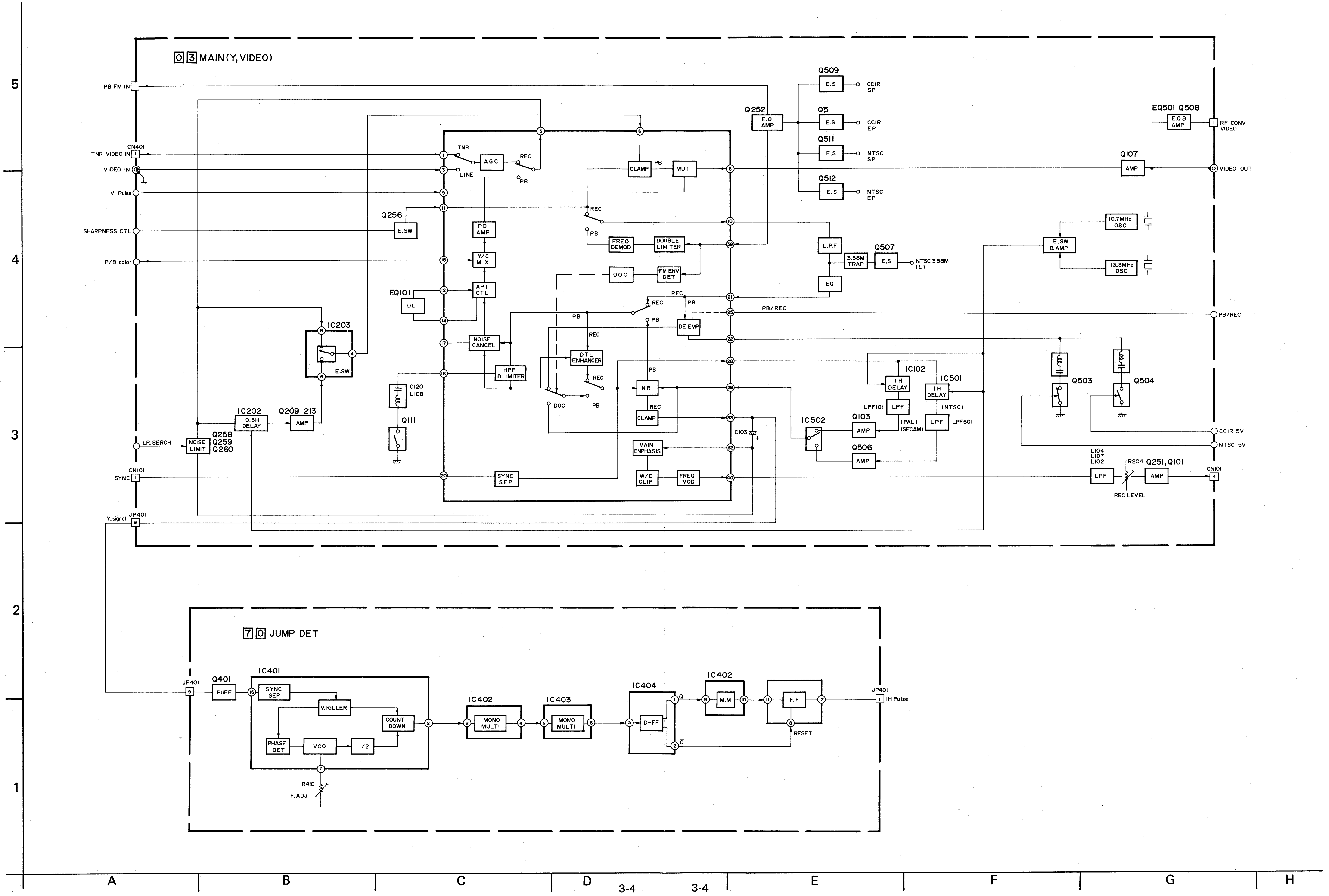
3.3 BOARD INTERCONNECTION DIAGRAM



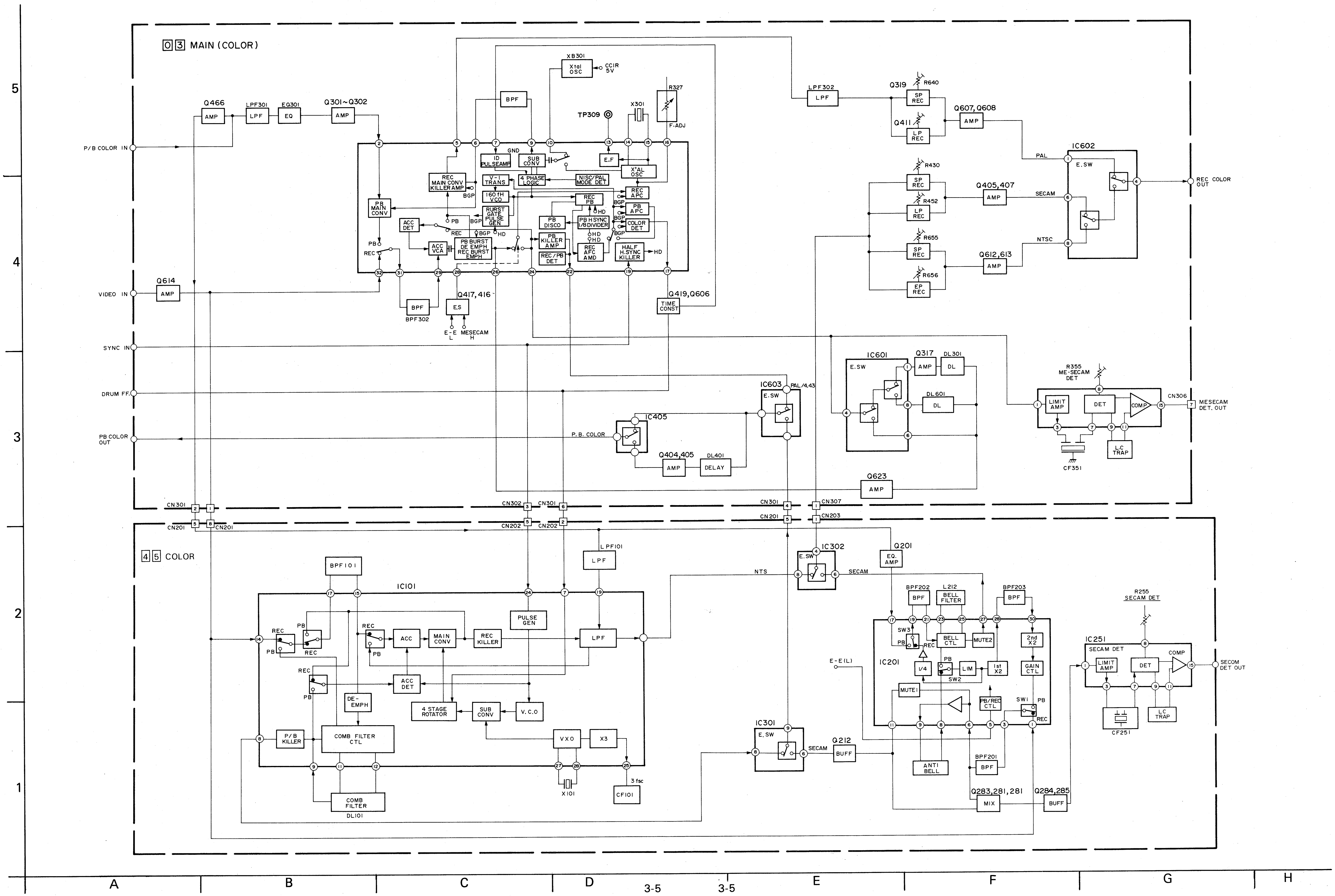
08 TUNER CTL
FRONT END
07 IF
61 COLOR
RF OUT
RF IN
RF CONVERTER
AUDIO
VIDEO
OUT
IN
70 JUMP DET
03 MAIN
V. LOCK
REMOTE PAUSE
06 TERMINAL
AC110~240V 50/60HZ
01 SW REG
41 U. DRUM
42 CONN.
43 PRE/REC
48 SERVO
04 MECHACON
56 CASS. HOUSING
CASS. MOTOR
FE
CTL
R/P
AE
12 A/C HEAD
51 DECK TERMINAL
REEL MOTOR
CAPSTAN MOTOR
LOADING MOTOR
53 REC SAFE.
54 END SENS.
52 RELAY
22 OPERATION
58 DRUM MOTOR
20 TIMER
35 MEMORY
28 SWITCH /DISPLAY
1
2
3
4
5
A
B
C
D
E
F
G
H

7 0	JUMP DET
6 1	COLOR
6 0	
5 9	
5 8	DRUM MOTOR
5 7	
5 6	CASSETTE HOUSING
5 5	
5 4	END SENSOR
5 3	REC SAFETY
5 2	RELAY
5 1	DECK TERMINAL
4 8	SERVO
4 3	PRE/REC
4 2	CONNECT
4 1	UPPER.DRUM
3 5	MEMORY
2 8	SWITCH/DISPLAY
2 7	
2 6	
2 5	
2 4	
2 3	
2 2	OPERATION
2 1	
2 0	TIMER
1 9	
1 8	
1 7	
1 6	
1 5	
1 4	
1 3	
1 2	A/CTL HEAD
1 1	REG JUNCTION
1 0	
0 9	
0 8	TUNER CTL
0 7	IF
0 6	TERMINAL
0 5	
0 4	MECHACON
0 3	MAIN
0 2	
0 1	SW REG
N O	NAME

3.4 VIDEO (LUMINANCE) BLOCK DIAGRAMS

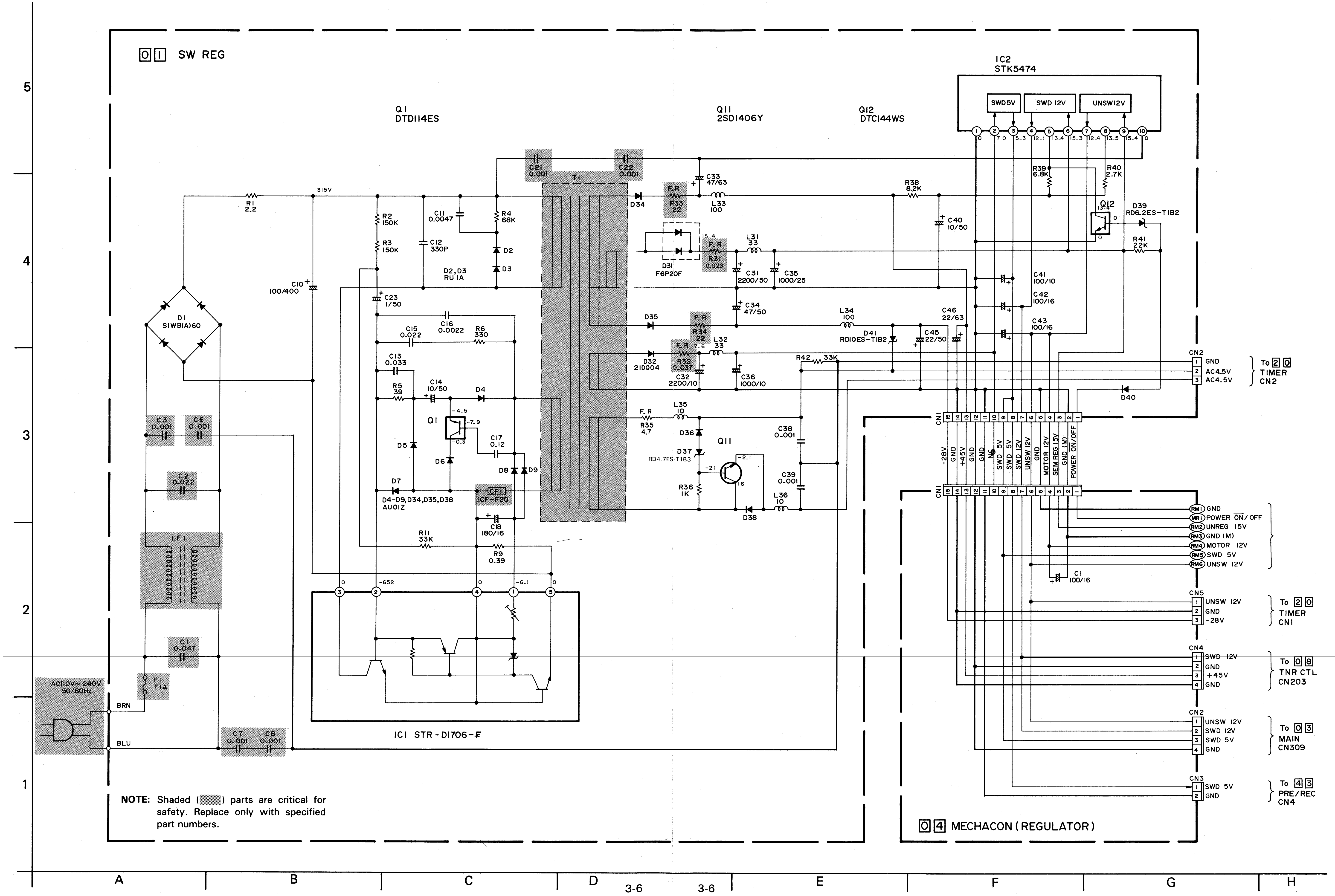

03 MAIN (Y, VIDEO)
PB FM IN
CN401
TNR VIDEO IN
VIDEO IN
V Pulse
SHARPNESS CTL
P/B color
LP. SERCH
CN101
SYNC
Y. signal
JP401
TNR
AGC
REC
LINE
PB
CLAMP
MUT
Q256
E.SW
PB AMP
Y/C MIX
APT CTL
EQ101
DL
NOISE CANCEL
HPF &LIMITER
C120
L108
Q111
IC203
E.SW
IC202
0.5H DELAY
Q209 213
AMP
NOISE LIMIT
Q258
Q259
Q260
SYNC SEP
FREQ DEMOD
DOUBLE LIMITER
DOC
FM ENV DET
DE EMP
DTL ENHANCER
NR
CLAMP
MAIN ENPHASIS
W/D CLIP
FREQ MOD
C103
Q252
E.Q AMP
Q509
E.S
CCIR SP
Q5
CCIR EP
Q511
NTSC SP
Q512
NTSC EP
L.P.F
3.58M TRAP
Q507
NTSC 3.58M (L)
EQ
PB/REC
IC102
1H DELAY
LPF
LPF101
IC501
(NTSC)
(PAL)
(SECAM)
LPF501
IC502
Q103
AMP
Q506
EQ501 Q508
E.Q & AMP
RF CONV VIDEO
Q107
VIDEO OUT
10.7MHz OSC
E.SW & AMP
13.3MHz OSC
Q503
Q504
CCIR 5V
NTSC 5V
L104
L107
L102
R204
Q251, Q101
REC LEVEL
CN101
70 JUMP DET
JP401
Q401
BUFF
IC401
SYNC SEP
V.KILLER
COUNT DOWN
PHASE DET
VCO
1/2
R410
F. ADJ
IC402
MONO MULTI
IC403
MONO MULTI
IC404
D-FF
Q
Q̄
IC402
M.M
F.F
RESET
JP401
1H Pulse
5
4
3
2
1
A
B
C
D
E
F
G
H

3.5 VIDEO (COLOR) BLOCK DIAGRAMS



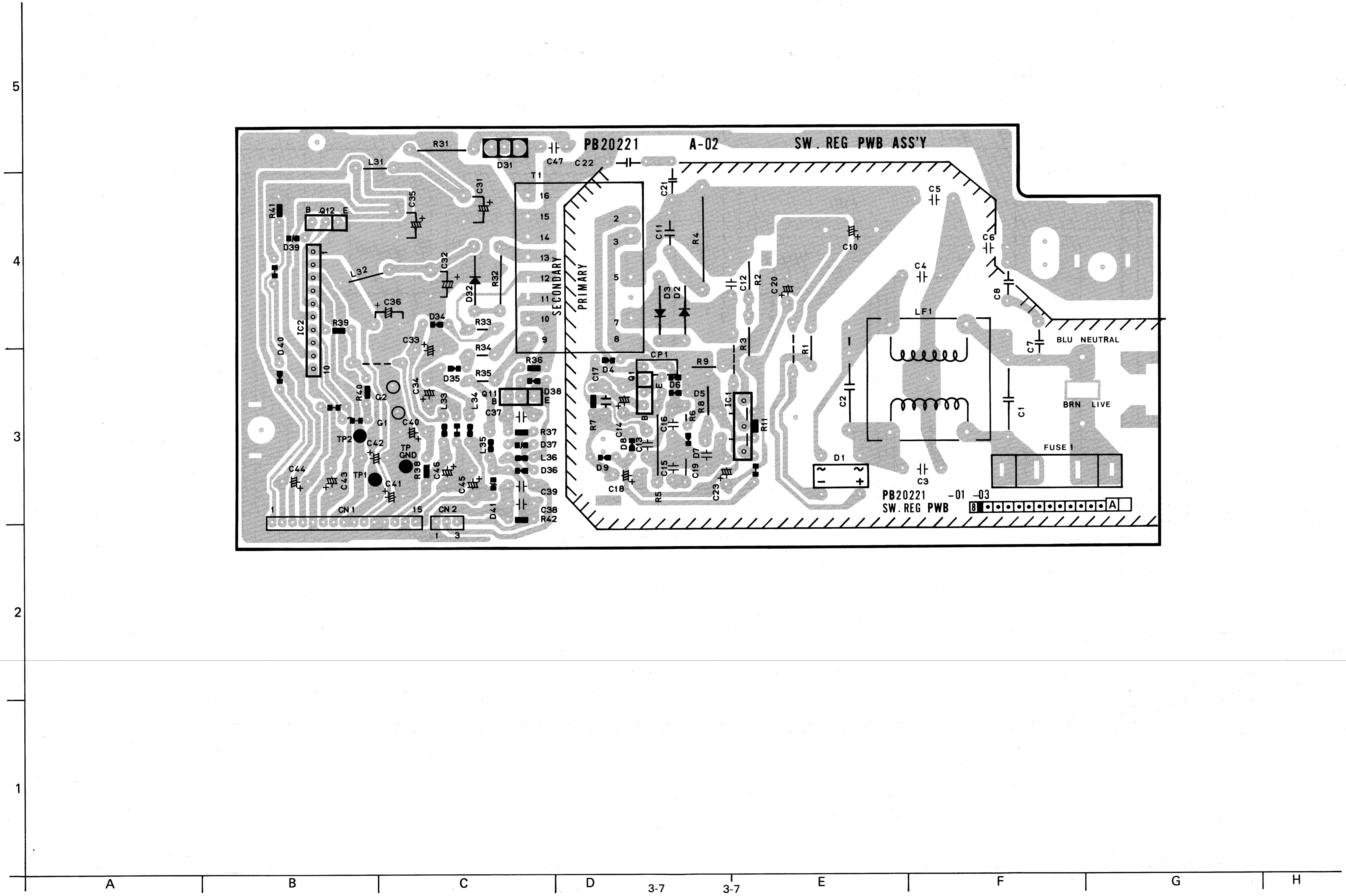
03 MAIN (COLOR)
P/B COLOR IN
Q466
AMP
LPF301
LPF
EQ301
EQ
Q301~Q302
AMP
VIDEO IN
Q614
AMP
SYNC IN
DRUM FF
PB COLOR OUT
XB301
Xtal OSC
CCIR 5V
BPF
TP309
X301
R327
F-ADJ
GND
ID PULSEAMP
SUB CONV
REC MAIN CONV KILLER AMP
V-I TRANS
4 PHASE LOGIC
NISC/PAL MODE DET
E.F
X'AL OSC
160 fH VCO
REC PB
REC APC
PB MAIN CONV
BURST GATE PULSE GEN
PB APC
PB DISCO
PB H SYNC 1/8 DIVIDER
COLOR DET
ACC DET
PB BURST DE EMPH REC BURST EMPH
PB KILLER AMP
REC AFC AMD
HALF H.SYNC KILLER
ACC VCA
REC/PB DET
BGP
HD
PB
REC
BPF
BPF302
E.S
Q417,416
E-E L
MESECAM H
Q419,Q606
TIME CONST
LPF302
LPF
Q319
R640
SP REC
Q411
LP REC
Q607,Q608
AMP
IC602
E.SW
PAL
SECAM
NTSC
REC COLOR OUT
R430
R452
Q405,407
R655
R656
EP REC
Q612,613
IC601
Q317
DL301
DL
DL601
IC603
PAL/4.43
E.SW
IC405
P.B. COLOR
Q404,405
DL401
DELAY
Q623
R355 ME-SECAM DET
LIMIT AMP
DET
COMP
CN306
MESECAM DET. OUT
LC TRAP
CF351
CN301
CN302
CN307
CN201
CN202
CN203
45 COLOR
BPF101
IC101
LPF101
ACC
MAIN CONV
REC KILLER
PULSE GEN
ACC DET
DE-EMPH
4 STAGE ROTATOR
SUB CONV
V.C.O
P/B KILLER
COMB FILTER CTL
VXO
X3
X101
CF101
3 fsc
COMB FILTER
DL101
IC302
NTS
Q201
EQ. AMP
BPF202
L212
BELL FILTER
BPF203
SW3
BELL CTL
MUTE2
2nd X2
IC201
1/4
LIM
1st X2
GAIN CTL
SW2
MUTE1
PB/REC CTL
SW1
E-E(L)
IC301
Q212
BUFF
ANTI BELL
BPF201
Q283,281,281
MIX
Q284,285
R255 SECAM DET
IC251
SECAM DET
CF251
SECOM DET OUT
5
4
3
2
1
A
B
C
D
E
F
G
H

3.6 SWITCHING REGULATOR SCHEMATIC DIAGRAMS


01 SW REG
Q1
DTD114ES
Q11
2SD1406Y
Q12
DTC144WS
IC2
STK5474
SWD5V
SWD 12V
UNSW12V
R1
2.2
315V
R2
150K
R3
150K
C11
0.0047
C12
330P
R4
68K
D2
D3
D2,D3
RU1A
C10
100/400
D1
S1WB(A)60
C23
1/50
C21
0.001
C22
0.001
T1
C16
0.0022
C15
0.022
R6
330
C13
0.033
R5
39
C14
10/50
D4
Q1
-4.5
-7.9
-0.3
D5
D6
C17
0.12
D8
D9
D7
D4-D9,D34,D35,D38
AU01Z
CP1
ICP-F20
C18
180/16
R11
33K
R9
0.39
IC1 STR-D1706-F
C3
0.001
C6
0.001
C2
0.022
LF1
C1
0.047
F1
T1A
AC110V~240V
50/60Hz
BRN
BLU
C7
0.001
C8
0.001
D34
F.R
R33
22
C33
47/63
L33
100
D31
F6P20F
15.4
F.R
R31
0.023
L31
33
C31
2200/50
C35
1000/25
C34
47/50
D35
F.R
R34
22
L34
100
D41
RD10ES-T1B2
C45
22/50
C46
22/63
D32
21DQ04
F.R
R32
0.037
7.6
L32
33
C32
2200/10
C36
1000/10
R42
33K
F.R
R35
4.7
L35
10
D36
D37
RD4.7ES-T1B3
Q11
-2.1
-21
16
R36
1K
D38
L36
10
C38
0.001
C39
0.001
R38
8.2K
C40
10/50
R39
6.8K
R40
2.7K
Q12
13.4
D39
RD6.2ES-T1B2
R41
22K
C41
100/10
C42
100/16
C43
100/16
D40
CN2
1 GND
2 AC4.5V
3 AC4.5V
To 20
TIMER
CN2
CN1
15 -28V
14 GND
13 +45V
12 GND
11 GND
10 NC
9 SWD 5V
8 SWD 5V
7 SWD 12V
6 UNSW 12V
5 GND
4 MOTOR 12V
3 SEM REG 15V
2 GND (M)
1 POWER ON/OFF
RM1 GND
MR1 POWER ON/OFF
RM2 UNREG 15V
RM3 GND (M)
RM4 MOTOR 12V
RM5 SWD 5V
RM6 UNSW 12V
C1
100/16
CN5
1 UNSW 12V
2 GND
3 -28V
To 20
TIMER
CN1
CN4
1 SWD 12V
2 GND
3 +45V
4 GND
To 08
TNR CTL
CN203
CN2
1 UNSW 12V
2 SWD 12V
3 SWD 5V
4 GND
To 03
MAIN
CN309
CN3
1 SWD 5V
2 GND
To 43
PRE/REC
CN4
04 MECHACON (REGULATOR)
1
2
3
4
5
A
B
C
D
E
F
G
H

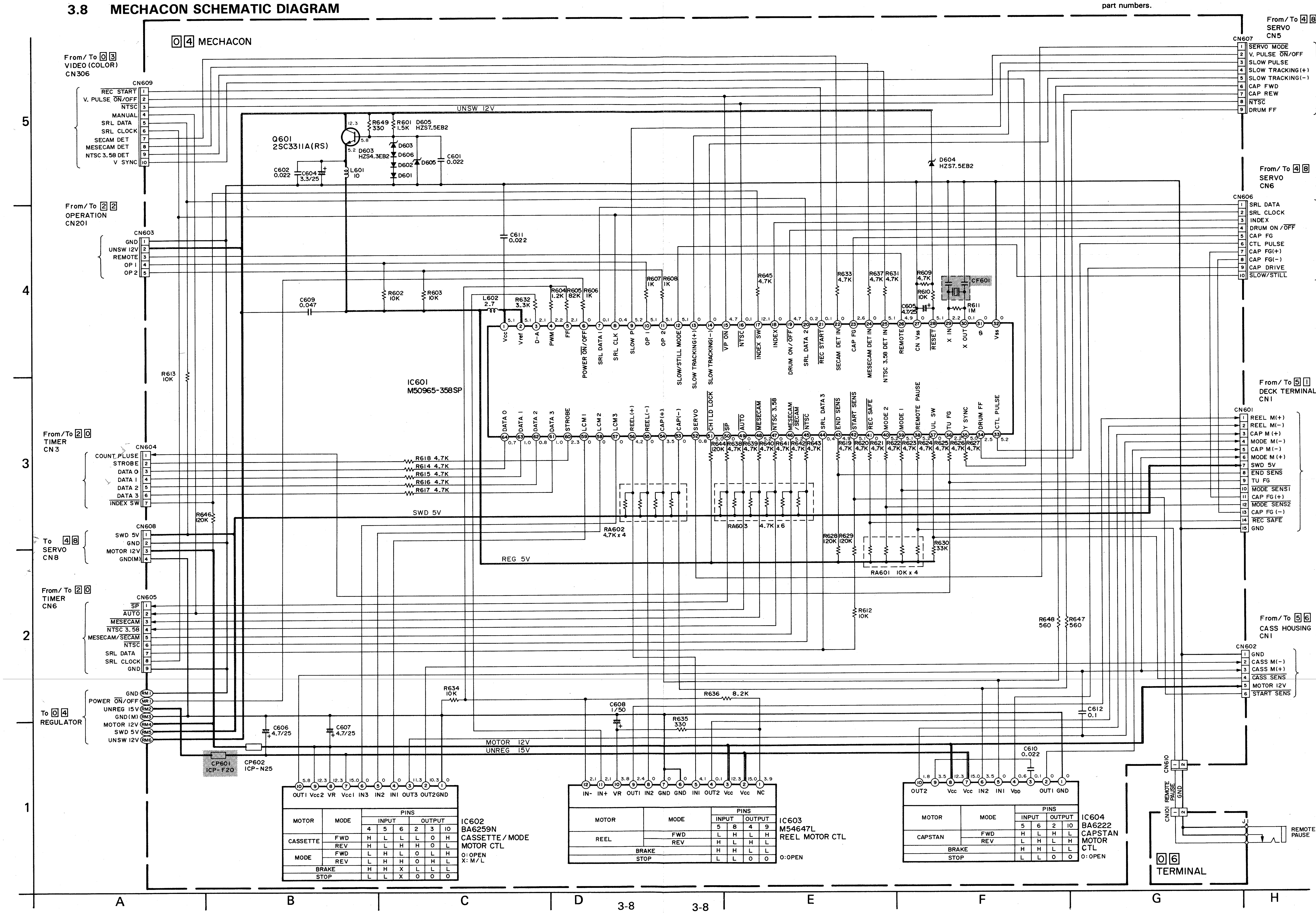
NOTE: Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

3.7 SWITCHING REGULATOR CIRCUIT BOARD


PB20221
A-02
SW. REG PWB ASS'Y
SECONDARY
PRIMARY
T1
16
15
14
13
12
11
10
9
2
3
5
7
8
R31
D31
C47
C22
L31
C31
C35
R41
Q12
B
E
D39
IC2
1
10
L32
C32
D32
R32
C36
R39
D34
R33
C33
R34
D40
D35
R35
R36
R40
G2
C34
L33
L34
Q11
D38
C37
G1
C40
TP2
C42
TP GND
R37
D37
L35
L36
D36
C44
C43
TP1
C41
R38
C46
C45
D41
C39
C38
R42
CN1
15
CN2
3
C21
C11
R4
C10
C5
C6
C4
C8
C12
R2
C20
D3
D2
LF1
C7
BLU NEUTRAL
R3
R1
D4
C17
CP1
R9
Q1
D6
D5
C2
C1
BRN LIVE
R7
C14
C13
C16
R6
R8
IC1
R11
D8
D9
C15
C19
D7
C18
R5
C23
D1
C3
FUSE 1
PB20221 -01 -03
SW. REG PWB
A
B
C
D
E
F
G
H
1
2
3
4
5

3.8 MECHACON SCHEMATIC DIAGRAM

NOTE: Shaded (▨) parts are critical for safety. Replace only with specified part numbers.



04 MECHACON
From/To 03 VIDEO (COLOR) CN306
CN609
REC START
V. PULSE ON/OFF
NTSC
MANUAL
SRL DATA
SRL CLOCK
SECAM DET
MESECAM DET
NTSC 3.58 DET
V SYNC
From/To 22 OPERATION CN201
CN603
GND
UNSW 12V
REMOTE
OP 1
OP 2
From/To 20 TIMER CN3
CN604
COUNT PLUSE
STROBE
DATA 0
DATA 1
DATA 2
DATA 3
INDEX SW
To 48 SERVO CN8
CN608
SWD 5V
GND
MOTOR 12V
GND(M)
From/To 20 TIMER CN6
CN605
SP
AUTO
MESECAM
NTSC 3.58
MESECAM/SECAM
NTSC
SRL DATA
SRL CLOCK
GND
To 04 REGULATOR
GND
POWER ON/OFF
UNREG 15V
GND(M)
MOTOR 12V
SWD 5V
UNSW 12V
Q601 2SC3311A(RS)
R649 330
R601 1.5K
D605 HZS7.5EB2
D603 HZS4.3EB2
D603
D606
D602
D605
D601
C601 0.022
C602 0.022
C604 3.3/25
L601 10
UNSW 12V
D604 HZS7.5EB2
C611 0.022
C609 0.047
R602 10K
R603 10K
L602 2.7
R632 3.3K
R604 1.2K
R605 82K
R606 1K
R607 1K
R608 1K
R645 4.7K
R633 4.7K
R637 4.7K
R631 4.7K
R609 4.7K
R610 10K
C605 4.7/25
CF601
R611 1M
IC601 M50965-358SP
Vcc
Vref
D-A
PWM
FF
POWER ON/OFF
SRL DATA 1
SRL CLK
SLOW P
OP 1
OP 2
SLOW/STILL MODE
SLOW TRACKING(+)
SLOW TRACKING(−)
VP ON
NTSC
INDEX SW
INDEX
DRUM ON/OFF
SRL DATA 2
REC START
SECAM DET IN
CAP FG
MESECAM DET IN
NTSC 3.58 DET IN
REMOTE
CN Vss
RESET
X IN
X OUT
φ
Vss
DATA 0
DATA 1
DATA 2
DATA 3
STROBE
LCM1
LCM2
LCM3
REEL(+)
REEL(−)
CAP(+)
CAP(−)
SERVO
CHILD LOCK
SP
AUTO
MESECAM
NTSC 3.58
MESECAM/SECAM
NTSC
SRL DATA 3
END SENS
START SENS
REC SAFE
MODE 2
MODE 1
REMOTE PAUSE
UL SW
TU FG
Y SYNC
DRUM FF
CTL PULSE
R613 10K
R618 4.7K
R614 4.7K
R615 4.7K
R616 4.7K
R617 4.7K
R646 120K
SWD 5V
R644 120K
R638 4.7K
R639 4.7K
R640 4.7K
R641 4.7K
R642 4.7K
R643 4.7K
R619 4.7K
R620 4.7K
R621 4.7K
R622 4.7K
R623 4.7K
R624 4.7K
R625 4.7K
R626 4.7K
R627 4.7K
RA602 4.7K x 4
RA603 4.7K x 6
R628 120K
R629 120K
RA601 10K x 4
R630 33K
REG 5V
R612 10K
R648 560
R647 560
R634 10K
R636 8.2K
C608 1/50
R635 330
C612 0.1
C606 4.7/25
C607 4.7/25
MOTOR 12V
UNREG 15V
CP601 ICP-F20
CP602 ICP-N25
C610 0.022
From/To 48 SERVO CN5
CN607
SERVO MODE
V. PULSE ON/OFF
SLOW PULSE
SLOW TRACKING(+)
SLOW TRACKING(−)
CAP FWD
CAP REW
NTSC
DRUM FF
From/To 48 SERVO CN6
CN606
SRL DATA
SRL CLOCK
INDEX
DRUM ON/OFF
CAP FG
CTL PULSE
CAP FG(+)
CAP FG(−)
CAP DRIVE
SLOW/STILL
From/To 51 DECK TERMINAL CN1
CN601
REEL M(+)
REEL M(−)
CAP M (+)
MODE M(−)
CAP M(−)
MODE M (+)
SWD 5V
END SENS
TU FG
MODE SENS1
CAP FG(+)
MODE SENS2
CAP FG (−)
REC SAFE
GND
From/To 56 CASS HOUSING CN1
CN602
GND
CASS M(−)
CASS M(+)
CASS SENS
MOTOR 12V
START SENS
CN610
REMOTE PAUSE
GND
CN101
J1
REMOTE PAUSE
06 TERMINAL
IC602 BA6259N
OUT1
Vcc2
VR
Vcc1
IN3
IN2
IN1
OUT3
OUT2
GND
IC603 M54647L
IN−
IN+
VR
OUT1
IN2
GND
GND
IN1
OUT2
Vcc
Vcc
NC
IC604 BA6222
OUT2
Vcc
Vcc
IN2
IN1
VDD
OUT1
GND
A
B
C
D
E
F
G
H
1
2
3
4
5

IC602
BA6259N
CASSETTE / MODE
MOTOR CTL

MOTOR	MODE	PINS					
		INPUT			OUTPUT		
		4	5	6	2	3	10
CASSETTE	FWD	H	L	L	L	O	H
	REV	H	L	H	H	O	L
MODE	FWD	L	H	L	O	L	H
	REV	L	H	H	O	H	L
BRAKE		H	H	X	L	L	L
STOP		L	L	X	O	O	O

O: OPEN
X: M/L

IC603
M54647L
REEL MOTOR CTL

MOTOR	MODE	PINS			
		INPUT		OUTPUT	
		5	8	4	9
REEL	FWD	L	H	L	H
	REV	H	L	H	L
BRAKE		H	H	L	L
STOP		L	L	O	O

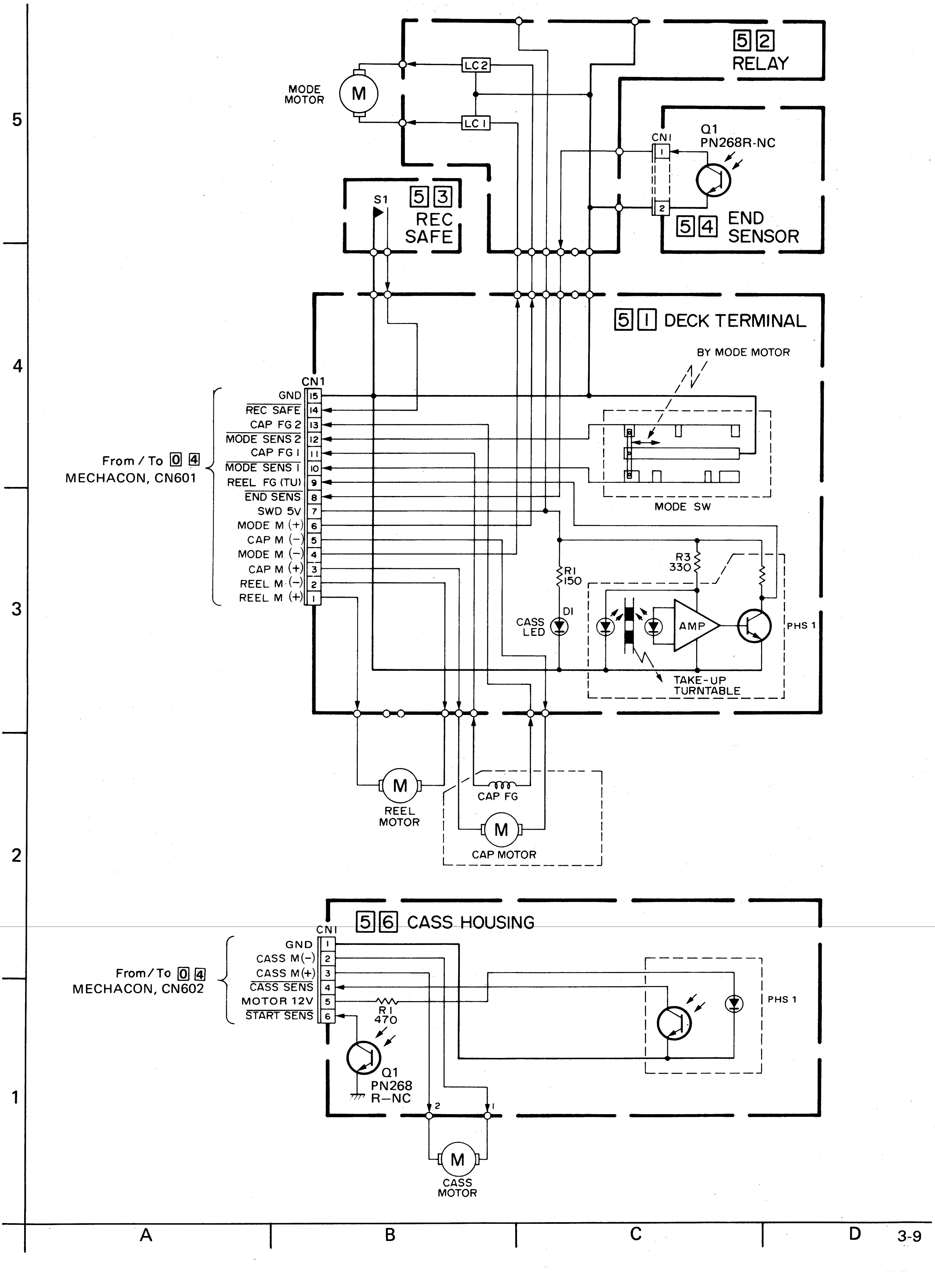
O:OPEN

IC604
BA6222
CAPSTAN
MOTOR
CTL

MOTOR	MODE	PINS			
		INPUT		OUTPUT	
		5	6	2	10
CAPSTAN	FWD	H	L	H	L
	REV	L	H	L	H
BRAKE		H	H	L	L
STOP		L	L	O	O

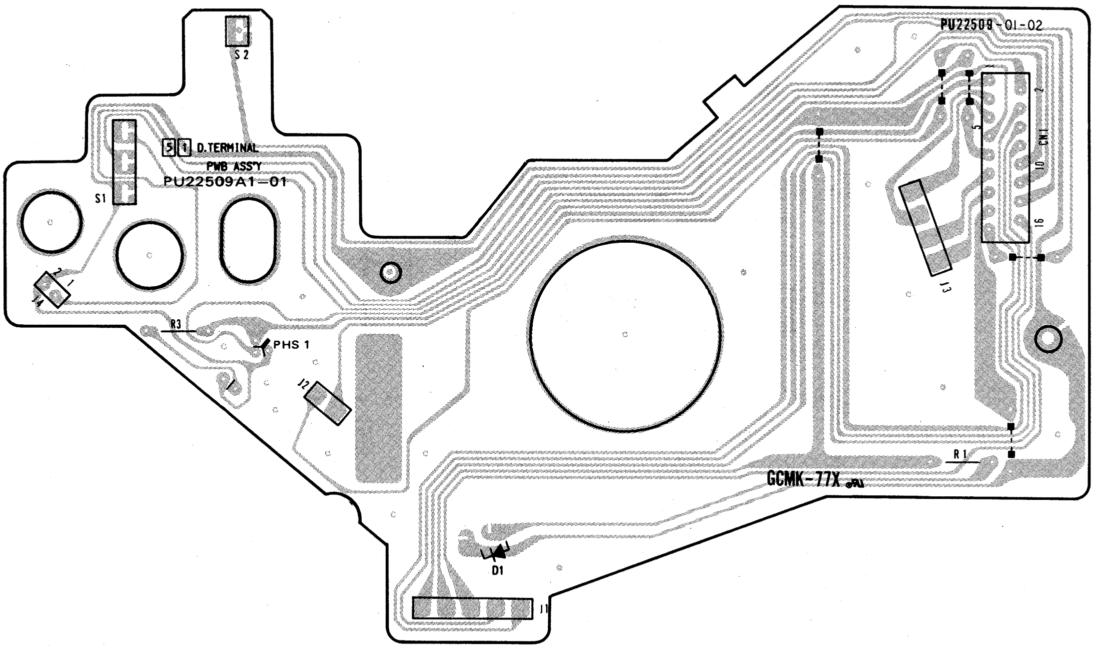
O: OPEN

3.9 DECK TERMINAL SCHEMATIC DIAGRAMS

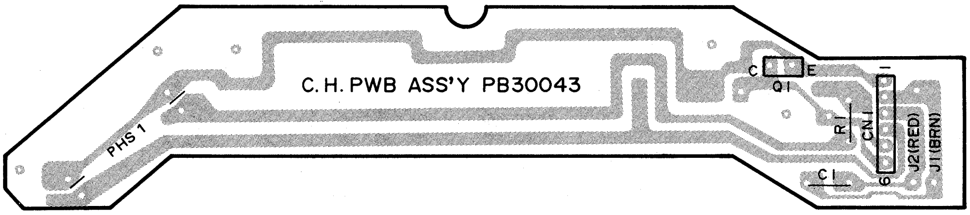

5
4
3
2
1
A
B
C
D
MODE MOTOR
M
LC2
LC1
52 RELAY
CN1
Q1
PN268R-NC
1
2
54 END SENSOR
S1
53 REC SAFE
51 DECK TERMINAL
BY MODE MOTOR
CN1
From / To 04 MECHACON, CN601
GND 15
REC SAFE 14
CAP FG 2 13
MODE SENS 2 12
CAP FG 1 11
MODE SENS 1 10
REEL FG (TU) 9
END SENS 8
SWD 5V 7
MODE M (+) 6
CAP M (−) 5
MODE M (−) 4
CAP M (+) 3
REEL M (−) 2
REEL M (+) 1
MODE SW
R3 330
R1 150
CASS LED
D1
AMP
PHS 1
TAKE-UP TURNTABLE
REEL MOTOR
CAP FG
CAP MOTOR
56 CASS HOUSING
CN1
From/To 04 MECHACON, CN602
GND 1
CASS M(−) 2
CASS M(+) 3
CASS SENS 4
MOTOR 12V 5
START SENS 6
R1 470
Q1 PN268 R−NC
PHS 1
2
1
CASS MOTOR

3.10 DECK TERMINAL CIRCUIT BOARDS

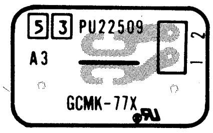
—DECK TERMINAL—


PU22509-01-02
S2
5 1 D.TERMINAL
PWB ASS'Y
PU22509A1-01
S1
J4
R3
PHS 1
J2
CN1
J3
R1
GCMK-77X
D1
J1

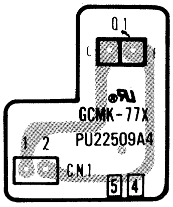
—CASSETTE HOUSING—


C.H. PWB ASS'Y PB30043
PHS 1
C
E
Q1
R1
CN1
J2(RED)
J1(BRN)
C1

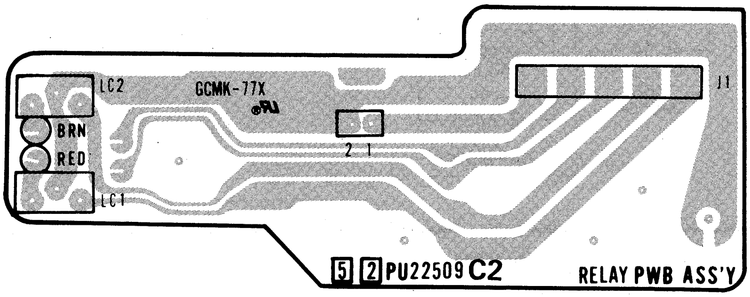
—REC SAFETY—


5 3 PU22509
A3
GCMK-77X
1
2

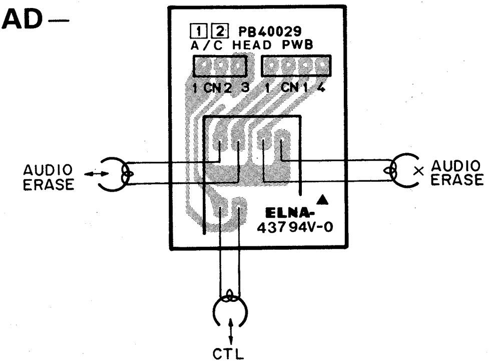
—END SENSOR—


Q1
GCMK-77X
PU22509A4
1 2
CN1
5 4

—RELAY—


LC2
GCMK-77X
J1
BRN
RED
2 1
LC1
5 2 PU22509 C2
RELAY PWB ASS'Y

—AUDIO/CTL HEAD—

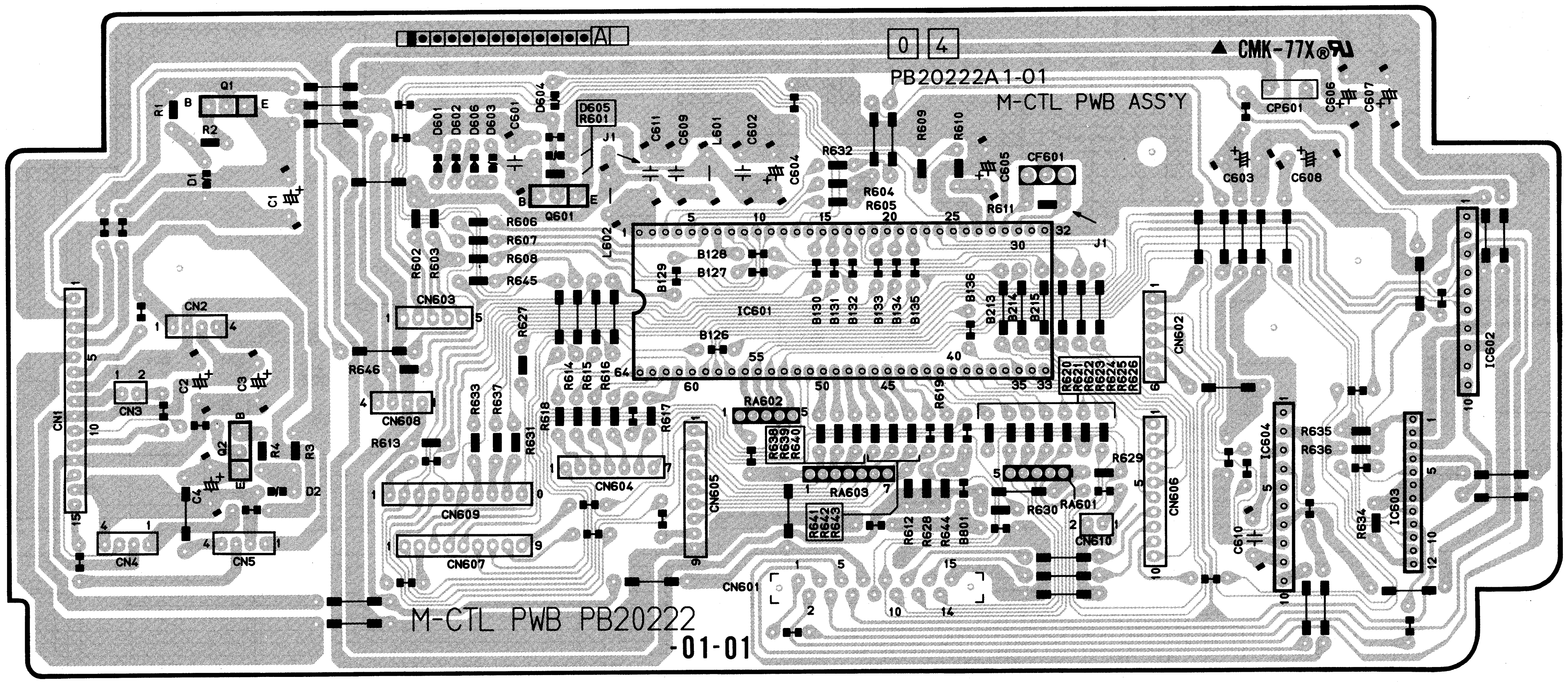

1 2 PB40029
A/C HEAD PWB
1 CN2 3
1 CN1 4
AUDIO
ERASE
AUDIO
ERASE
ELNA-
4379 4V-0
CTL

5
4
3
2
1

A B C D

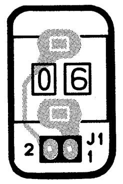
3.11 MECHACON AND TERMINAL CIRCUIT BOARDS

—MECHACON—



A
0 4
PB20222A1-01
M-CTL PWB ASS'Y
CMK-77X
M-CTL PWB PB20222
-01-01
Q1
R1
R2
D1
C1
CN1
CN2
CN3
CN4
CN5
C2
C3
C4
Q2
R3
R4
D2
D601
D602
D606
D603
C601
D604
D605
R601
J1
C611
C609
L601
C602
C604
Q601
R606
R607
R608
R645
R602
R603
L602
CN603
R627
R646
CN608
R613
R633
R637
R631
R618
R614
R615
R616
R617
CN609
CN604
CN607
CN605
R632
R604
R605
R609
R610
C605
CF601
R611
B128
B127
B129
B126
IC601
B130
B131
B132
B133
B134
B135
B136
B213
B214
B215
R620
R621
R622
R623
R624
R625
R626
RA602
R638
R639
R640
RA603
R641
R642
R643
R619
R612
R628
R644
B801
CN601
RA601
R630
CN610
R629
CN602
CN606
CP601
C606
C607
C603
C608
IC602
IC604
R635
R636
C610
R634
IC603

—TERMINAL—

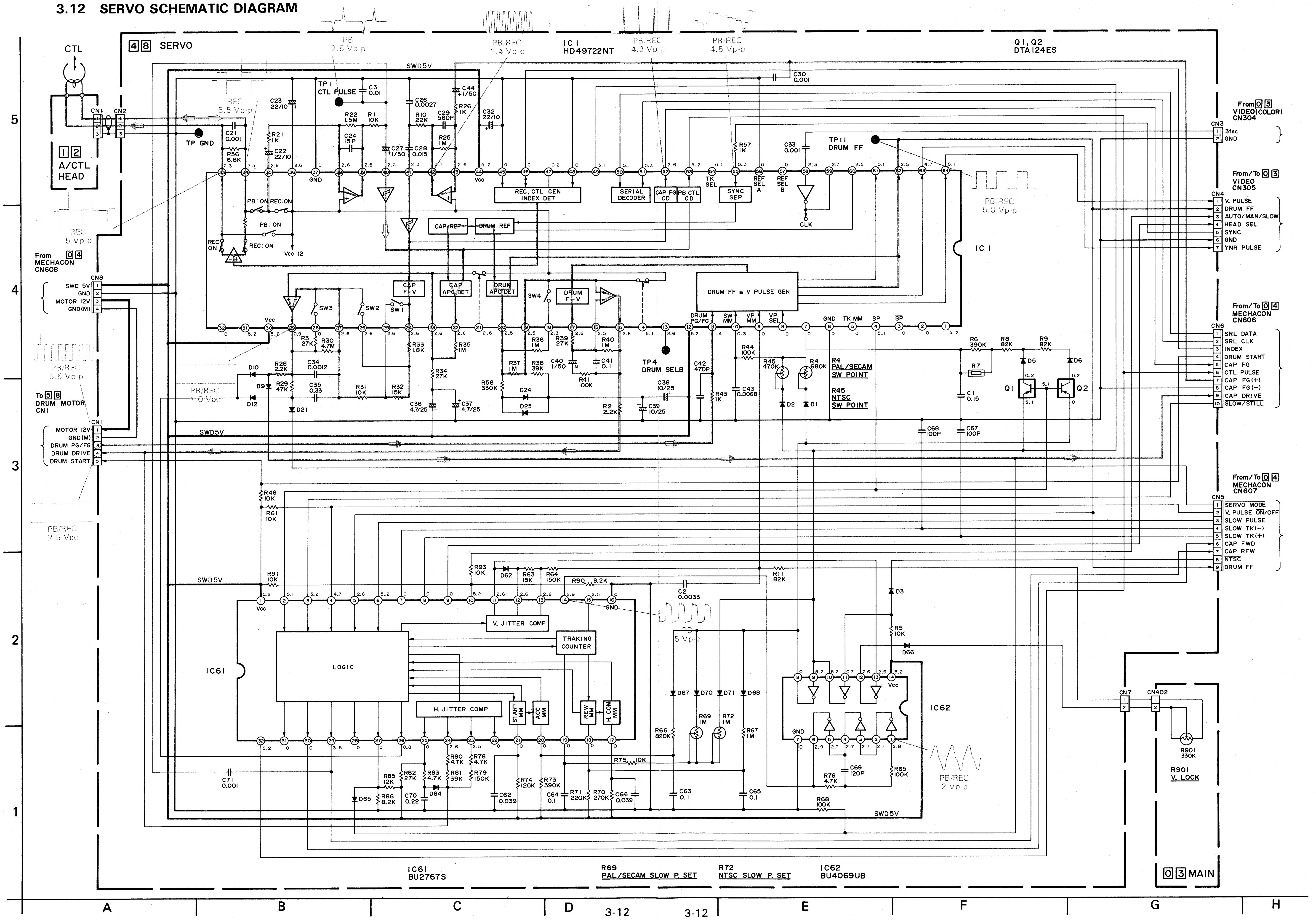


PB20222A2

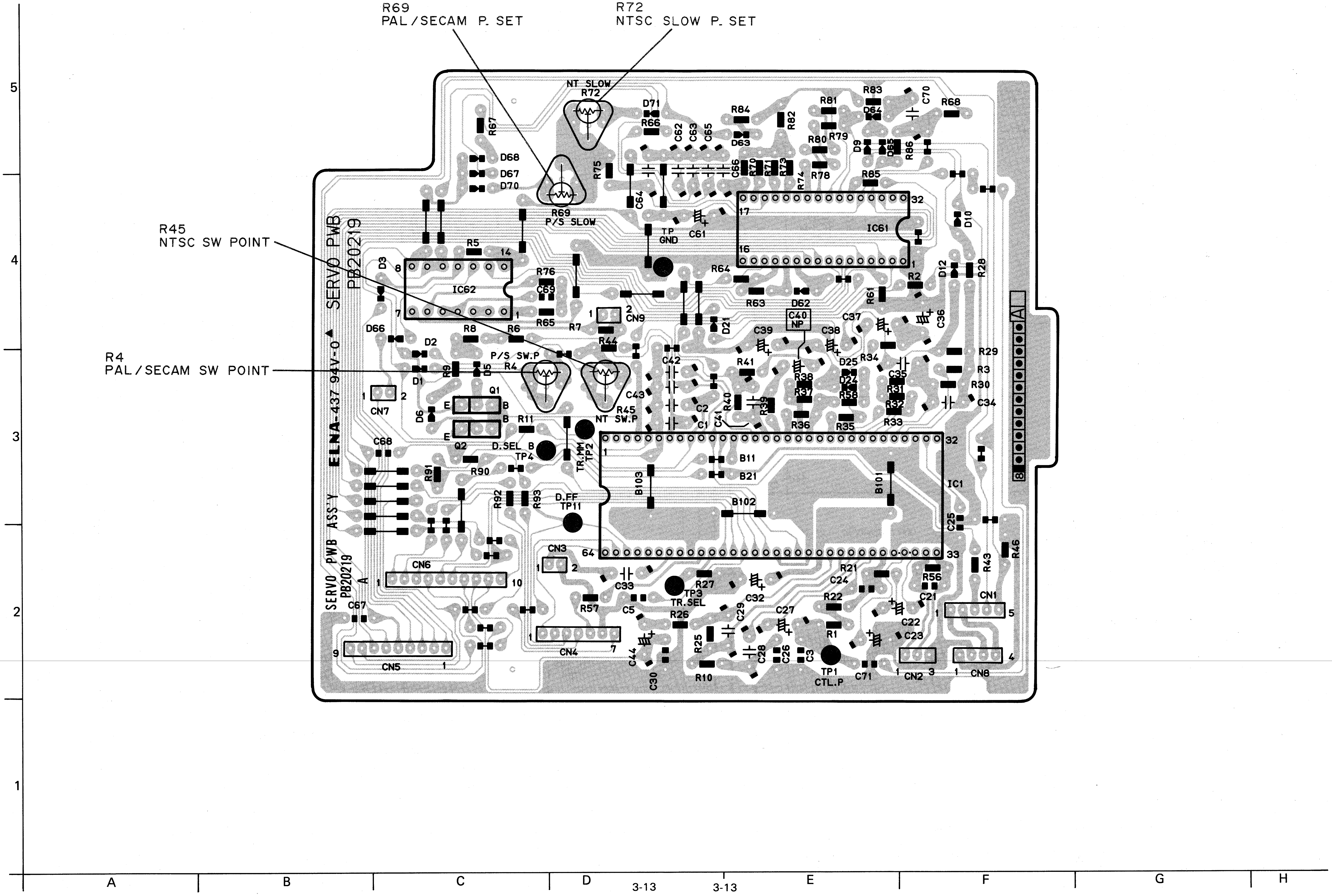
5
4
3
2
1

A B C D E F G H

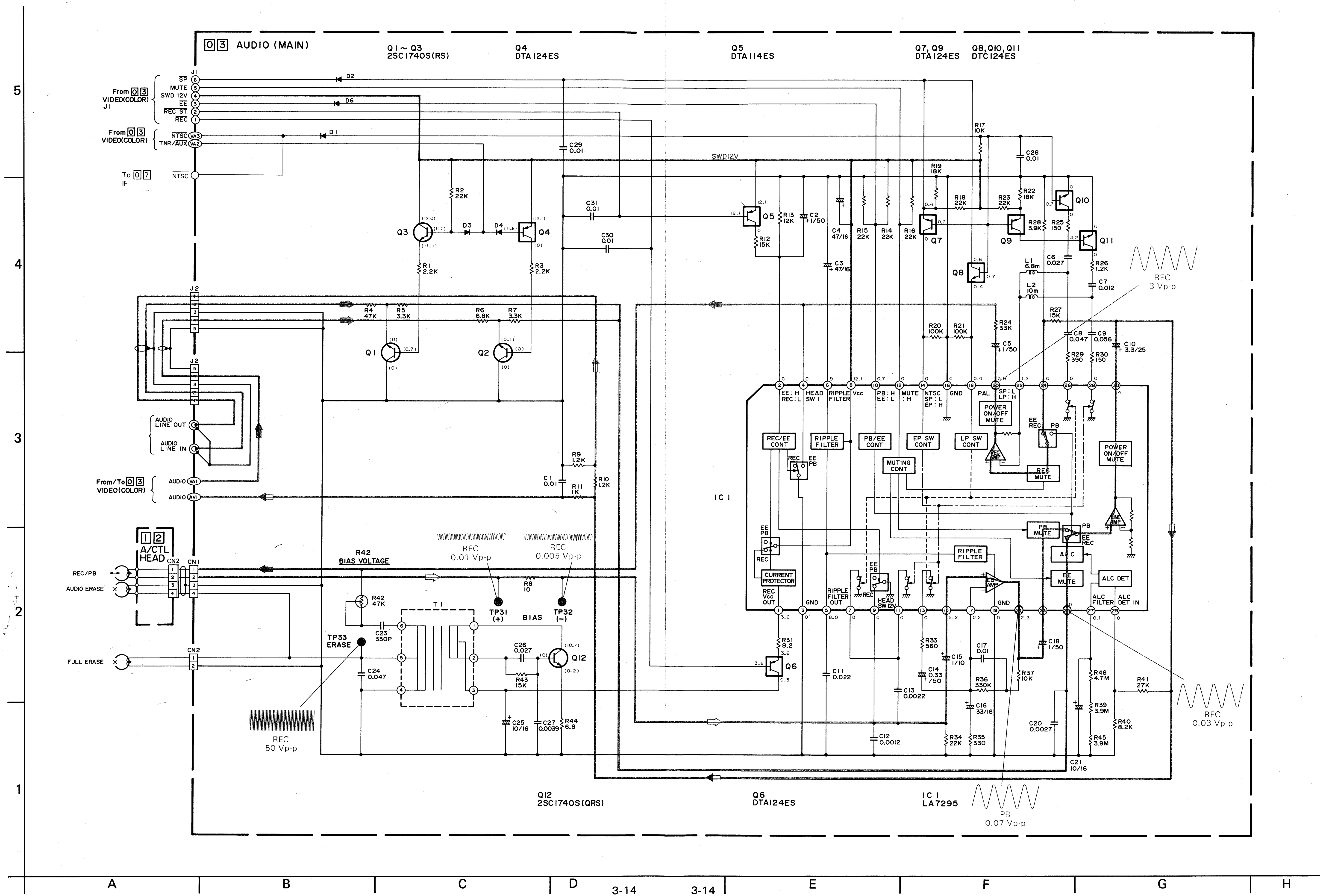
3.12 SERVO SCHEMATIC DIAGRAM


48 SERVO
CTL
12 A/CTL HEAD
CN1
CN2
TP GND
REC 5.5 Vp-p
REC 5 Vp-p
PB 2.5 Vp-p
PB/REC 1.4 Vp-p
PB/REC 4.2 Vp-p
PB/REC 4.5 Vp-p
PB/REC 5.0 Vp-p
PB/REC 5.5 Vp-p
PB/REC 1.0 Vdc
PB/REC 2.5 Vdc
PB 5 Vp-p
PB/REC 2 Vp-p
IC1 HD49722NT
Q1, Q2 DTA124ES
SWD5V
TP1 CTL PULSE
TP11 DRUM FF
TP4 DRUM SELB
REC, CTL GEN INDEX DET
SERIAL DECODER
CAP FG CD
PB CTL CD
SYNC SEP
TK SEL
REF SEL A
REF SEL B
CLK
CAP REF
DRUM REF
CAP F-V
CAP APC DET
DRUM APC DET
DRUM F-V
DRUM FF & V PULSE GEN
DRUM PG/FG
SW MM
VP MM
VP SEL
GND
TK MM
SP
SW1
SW2
SW3
SW4
PB : ON
REC : ON
PB : ON REC : ON
Vcc 12
R4 PAL/SECAM SW POINT
R45 NTSC SW POINT
From 04 MECHACON CN608
CN8
SWD 5V
GND
MOTOR 12V
GND(M)
To 58 DRUM MOTOR CN1
MOTOR 12V
GND(M)
DRUM PG/FG
DRUM DRIVE
DRUM START
From 03 VIDEO(COLOR) CN304
CN3
3fsc
GND
From/To 03 VIDEO CN305
CN4
V. PULSE
DRUM FF
AUTO/MAN/SLOW
HEAD SEL
SYNC
GND
YNR PULSE
From/To 04 MECHACON CN606
CN6
SRL DATA
SRL CLK
INDEX
DRUM START
CAP FG
CTL PULSE
CAP FG(+)
CAP FG(−)
CAP DRIVE
SLOW/STILL
From/To 04 MECHACON CN607
CN5
SERVO MODE
V. PULSE ON/OFF
SLOW PULSE
SLOW TK(−)
SLOW TK(+)
CAP FWD
CAP RFW
NTSC
DRUM FF
IC61
LOGIC
V. JITTER COMP
TRAKING COUNTER
H. JITTER COMP
START MM
ACC MM
REW MM
H. COM MM
IC62
CN7
CN402
R901 330K
R901 V. LOCK
03 MAIN
IC61 BU2767S
R69 PAL/SECAM SLOW P. SET
R72 NTSC SLOW P. SET
IC62 BU4069UB
1
2
3
4
5
A
B
C
D
E
F
G
H

3.13 SERVO CIRCUIT BOARD

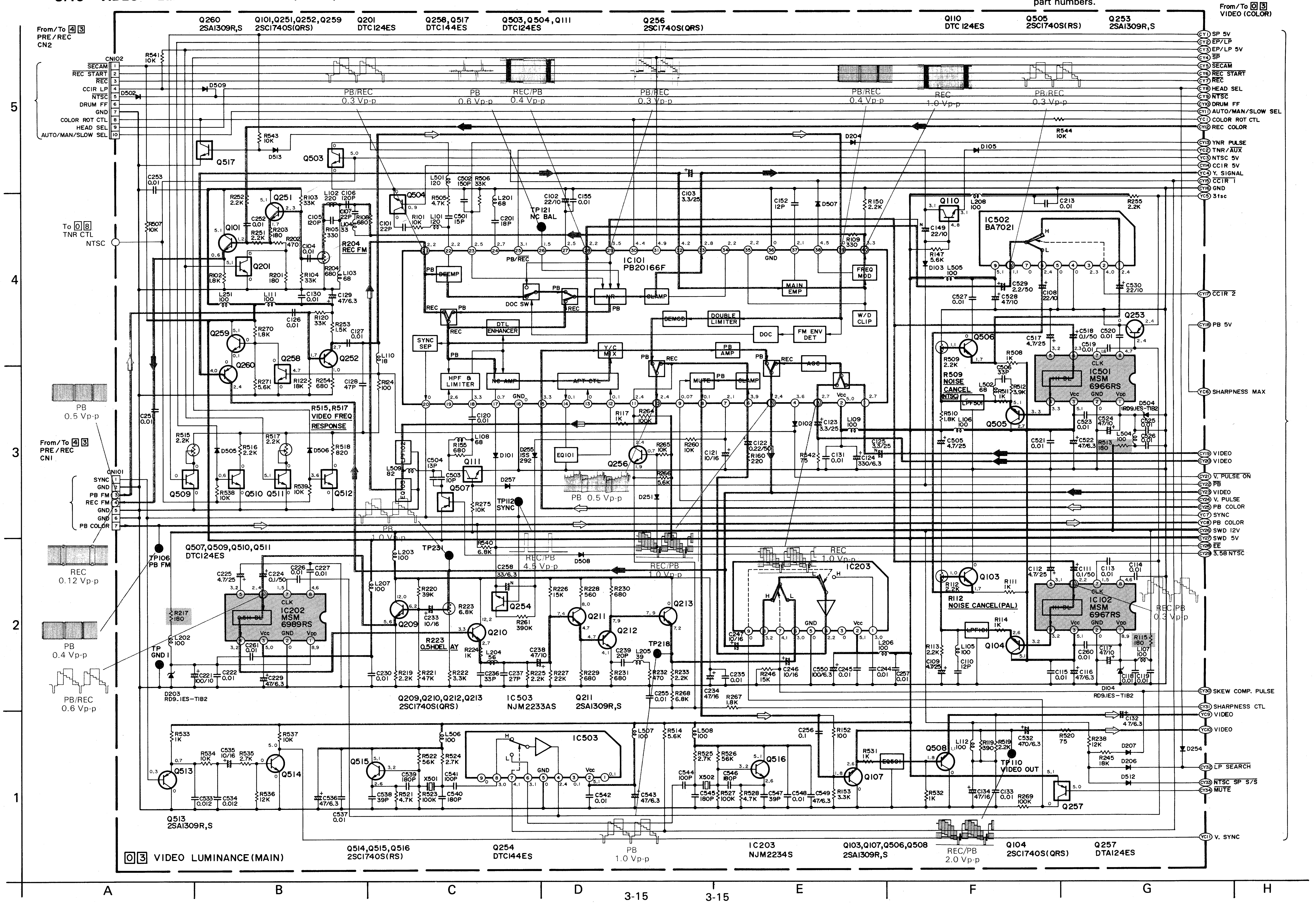

R69
PAL / SECAM P. SET
R72
NTSC SLOW P. SET
R45
NTSC SW POINT
R4
PAL / SECAM SW POINT
NT SLOW
R69 P/S SLOW
P/S SW.P
NT SW.P
TP GND
D.SEL B TP4
TR.MM TP2
D.FF TP11
TP3 TR.SEL
TP1 CTL.P
IC1
IC61
IC62
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN9
Q1
Q2
C40 NP
SERVO PWB PB20219
ELNA-437 94V-0
SERVO PWB ASS'Y
SERVO PWB PB20219 A
5
4
3
2
1
A
B
C
D
E
F
G
H

3.14 AUDIO SCHEMATIC DIAGRAM


03 AUDIO (MAIN)
Q1 ~ Q3 2SC1740S(RS)
Q4 DTA124ES
Q5 DTA114ES
Q7, Q9 DTA124ES
Q8, Q10, Q11 DTC124ES
From 03 VIDEO(COLOR) J1
SP
MUTE
SWD 12V
EE
REC ST
REC
From 03 VIDEO(COLOR)
NTSC
TNR/AUX
To 07 IF
NTSC
D1
D2
D6
D3
D4
SWD12V
AUDIO LINE OUT
AUDIO LINE IN
From/To 03 VIDEO(COLOR)
AUDIO
12 A/CTL HEAD
REC/PB
AUDIO ERASE
FULL ERASE
CN1
CN2
R42 BIAS VOLTAGE
REC 0.01 Vp-p
REC 0.005 Vp-p
TP31 (+)
BIAS
TP32 (−)
TP33 ERASE
REC 50 Vp-p
T1
Q12
IC1
REC 3 Vp-p
REC 0.03 Vp-p
PB 0.07 Vp-p
EE : H REC : L
HEAD SW 1
RIPPLE FILTER
Vcc
PB : H EE : L
MUTE : H
NTSC SP : L EP : H
GND
PAL
SP : L LP : H
POWER ON/OFF MUTE
REC/EE CONT
RIPPLE FILTER
PB/EE CONT
EP SW CONT
LP SW CONT
MUTING CONT
REC AMP
REC MUTE
LINE AMP
PB MUTE
ALC
ALC DET
EE MUTE
EQ AMP
CURRENT PROTECTOR
REC Vcc OUT
RIPPLE FILTER OUT
HEAD SW 12V
ALC FILTER
ALC DET IN
Q12 2SC1740S(QRS)
Q6 DTA124ES
IC1 LA7295

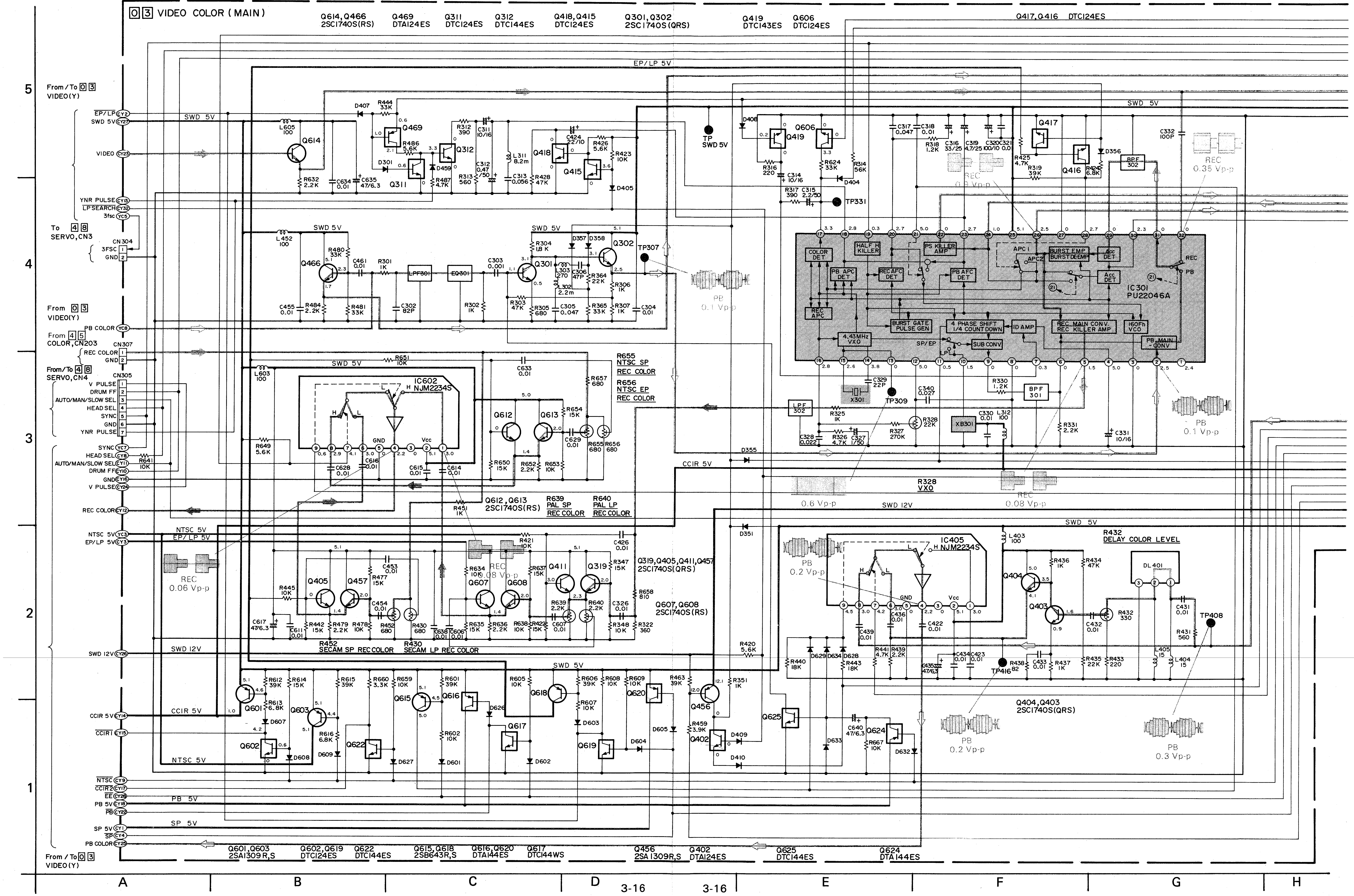
3.15 VIDEO —Luminance Section— (MAIN) SCHEMATIC DIAGRAM

NOTE: Shaded (▨) parts are critical for safety. Replace only with specified part numbers.


From/To 4 3 PRE/REC CN2
CN102
SECAM
REC START
REC
CCIR LP
NTSC
DRUM FF
GND
COLOR ROT CTL
HEAD SEL
AUTO/MAN/SLOW SEL
From/To 0 3 VIDEO (COLOR)
SP 5V
EP/LP
EP/LP 5V
SP
SECAM
REC START
REC
HEAD SEL
NTSC
DRUM FF
AUTO/MAN/SLOW SEL
COLOR ROT CTL
REC COLOR
YNR PULSE
TNR/AUX
NTSC 5V
CCIR 5V
Y. SIGNAL
CCIR 1
GND
3fsc
CCIR 2
PB 5V
SHARPNESS MAX
VIDEO
VIDEO
V. PULSE ON
PB
VIDEO
V. PULSE
PB COLOR
SYNC
PB COLOR
SWD 12V
SWD 5V
EE
3.58 NTSC
SKEW COMP. PULSE
SHARPNESS CTL
VIDEO
VIDEO
LP SEARCH
NTSC SP S/S
MUTE
V. SYNC
To 0 8 TNR CTL NTSC
From/To 4 3 PRE/REC CN1
CN101
SYNC
GND
PB FM
REC FM
GND
GND
PB COLOR
Q260 2SA1309R,S
Q101,Q251,Q252,Q259 2SC1740S(QRS)
Q201 DTC124ES
Q258,Q517 DTC144ES
Q503,Q504,Q111 DTC124ES
Q256 2SC1740S(QRS)
Q110 DTC124ES
Q505 2SC1740S(RS)
Q253 2SA1309R,S
Q507,Q509,Q510,Q511 DTC124ES
Q209,Q210,Q212,Q213 2SC1740S(QRS)
IC503 NJM2233AS
Q211 2SA1309R,S
Q513 2SA1309R,S
Q514,Q515,Q516 2SC1740S(RS)
Q254 DTC144ES
IC203 NJM2234S
Q103,Q107,Q506,Q508 2SA1309R,S
Q104 2SC1740S(QRS)
Q257 DTA124ES
IC101 PB20166F
IC502 BA7021
IC501 MSM 6966RS
IC102 MSM 6967RS
IC202 MSM 6989RS
IC203
IC503
DEEMP
DOC SW
NR
CLAMP
MAIN EMP
FREQ MOD
W/D CLIP
DEMOD
DOUBLE LIMITER
DOC
FM ENV DET
DTL ENHANCER
SYNC SEP
Y/C MIX
PB AMP
AGC
HPF & LIMITER
NC AMP
APT CTL
MUTE
CLAMP
EQ101
LPF501
LPF101
CS501
TP121 NC BAL
TP112 SYNC
TP231
TP106 PB FM
TP GND1
TP218
TP110 VIDEO OUT
R515,R517 VIDEO FREQ RESPONSE
R509 NOISE CANCEL (NTSC)
R112 NOISE CANCEL(PAL)
R223 0.5HDELAY
PB/REC 0.3 Vp-p
PB 0.6 Vp-p
REC/PB 0.4 Vp-p
PB/REC 0.3 Vp-p
PB/REC 0.4 Vp-p
REC 1.0 Vp-p
PB/REC 0.3 Vp-p
PB 0.5 Vp-p
PB 0.5 Vp-p
REC 0.12 Vp-p
PB 0.4 Vp-p
PB/REC 0.6 Vp-p
PB 1.0 Vp-p
REC/PB 4.5 Vp-p
REC/PB 1.0 Vp-p
REC 1.0 Vp-p
REC/PB 0.3 Vp-p
PB 1.0 Vp-p
REC/PB 2.0 Vp-p
D104 RD9.1ES-TIB2
D203 RD9.1ES-TIB2
D504 RD9.1ES-TIB2
0 3 VIDEO LUMINANCE (MAIN)
5
4
3
2
1
A
B
C
D
E
F
G
H

3.16 VIDEO —Color Section— (MAIN) SCHEMATIC DIAGRAM (1)

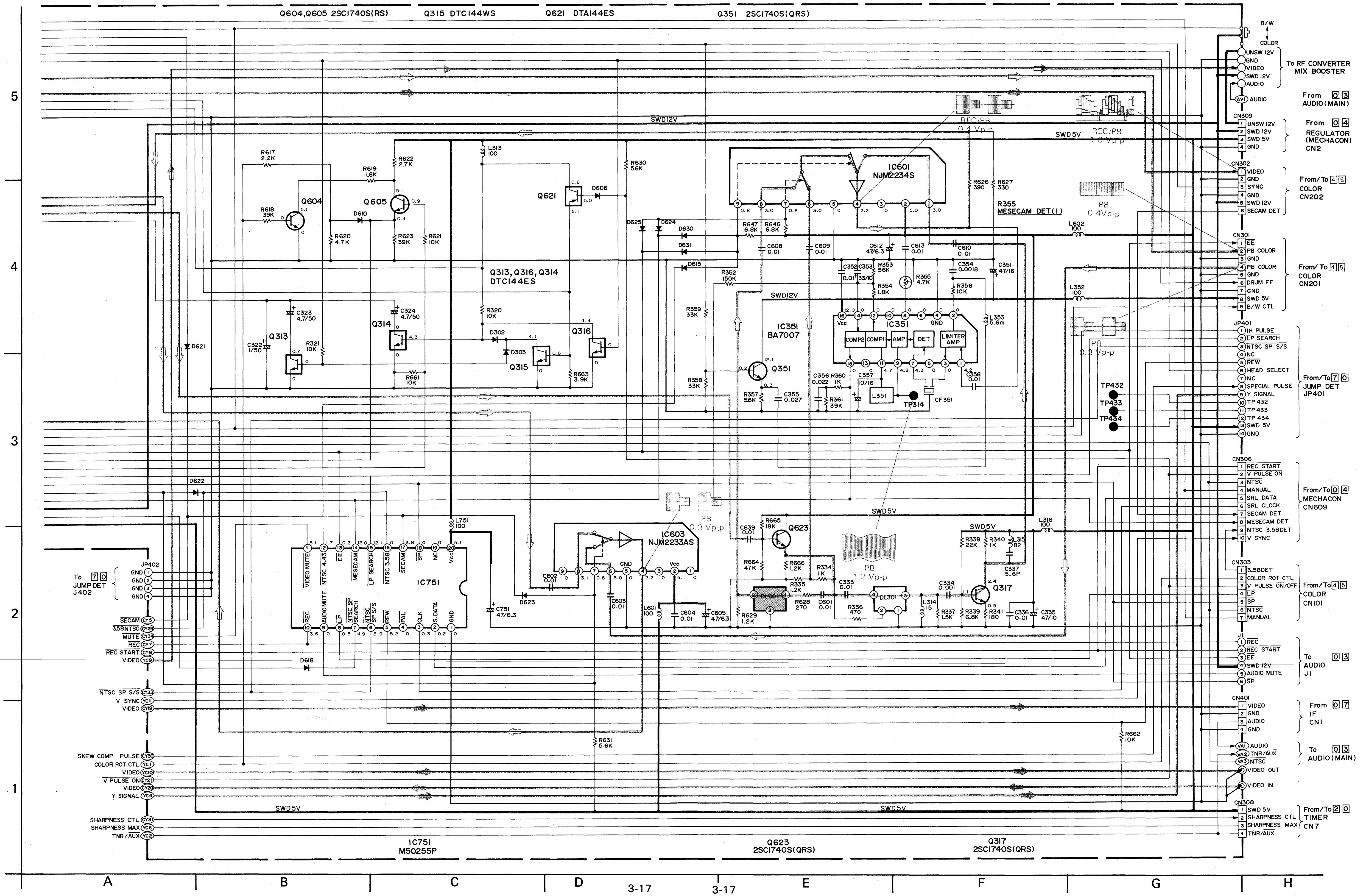
NOTE: Shaded (▨) parts are critical for safety. Replace only with specified part numbers.



03 VIDEO COLOR (MAIN)
Q614,Q466 2SC1740S(RS)
Q469 DTA124ES
Q311 DTC124ES
Q312 DTC144ES
Q418,Q415 DTC124ES
Q301,Q302 2SC1740S(QRS)
Q419 DTC143ES
Q606 DTC124ES
Q417,Q416 DTC124ES
EP/LP 5V
SWD 5V
From/To 03 VIDEO(Y)
EP/LP CY2
SWD 5V CY27
VIDEO CY23
YNR PULSE CY13
LP SEARCH CY32
3fsc CY25
To 48 SERVO,CN3
CN304
3FSC
GND
From 03 VIDEO(Y)
PB COLOR CY8
From 45 COLOR,CN203
CN307
REC COLOR
GND
From/To 48 SERVO,CN4
CN305
V PULSE
DRUM FF
AUTO/MAN/SLOW SEL
HEAD SEL
SYNC
GND
YNR PULSE
SYNC CY7
HEAD SEL CY6
AUTO/MAN/SLOW SEL CY11
DRUM FF CY10
GND CY16
V PULSE CY24
REC COLOR CY12
NTSC 5V CY3
EP/LP 5V CY3
SWD 12V CY26
CCIR 5V CY14
CCIR1 CY15
NTSC CY9
CCIR2 CY17
EE CY28
PB 5V CY18
PB CY22
SP 5V CY1
SP CY4
PB COLOR CY29
From/To 03 VIDEO(Y)
L605 100
Q614
R632 2.2K
C634 0.01
C635 47/6.3
D407
R444 33K
Q469
R486 5.6K
D301
Q311
D459
R487 4.7K
R312 390
C311 10/16
Q312
C312 0.47/50
R313 560
L311 8.2m
C313 0.056
R428 47K
Q418
C424 22/10
R426 5.6K
R423 10K
Q415
D405
TP SWD 5V
D408
Q419
Q606
R316 220
C314 10/16
R624 33K
R314 56K
D404
R317 390
C315 2.2/50
TP331
C317 0.047
C318 0.01
R318 1.2K
C316 33/25
C319 4.7/25
C320 100/10
C321 0.0
R425 4.7K
Q417
Q416
R319 39K
R424 6.8K
D356
BPF 302
C332 100P
REC 0.35 Vp-p
REC 0.9 Vp-p
L452 100
Q466
R480 33K
C461 0.01
R301 1K
LPF301
EQ301
C303 0.001
R304 1.8K
D357
D358
Q301
Q302
L303 270
C306 47P
L302 2.2m
R364 22K
R306 1K
TP307
PB 0.1 Vp-p
C455 0.01
R484 2.2K
R481 33K
C302 82P
R302 1K
R303 47K
R305 680
C305 0.047
R365 33K
R307 1K
C304 0.01
IC301 PU22046A
COLOR DET
HALF H KILLER
PS KILLER AMP
APC1
APC2
BURST EMP BURST DEEMP
Acc DET
PB APC DET
REC AFC DET
PB AFC DET
REC APC
BURST GATE PULSE GEN
4 PHASE SHIFT 1/4 COUNT DOWN
ID AMP
REC MAIN CONV. REC KILLER AMP
160Fh VCO
4.43MHz VXO
SP/EP
SUB CONV
PB MAIN CONV
REC
PB
C329 22P
X301
TP309
C340 0.027
R330 1.2K
BPF 301
LPF 302
R325 1K
R328 22K
XB301
C330 0.01
L312 100
R331 2.2K
C331 10/16
C328 0.022
R326 4.7K
C327 1/50
R327 270K
PB 0.1 Vp-p
R328 VXO
0.6 Vp-p
REC 0.08 Vp-p
L603 100
IC602 NJM2234S
GND
Vcc
R649 5.6K
R641 10K
C628 0.01
C616 0.01
C615 0.01
C614 0.01
R651 10K
C633 0.01
Q612
Q613
R654 15K
C629 0.01
R655 680
R656 680
R650 15K
R652 2.2K
R653 10K
R657 680
R655 NTSC SP REC COLOR
R656 NTSC EP REC COLOR
Q612,Q613 2SC1740S(RS)
R639 PAL SP REC COLOR
R640 PAL LP REC COLOR
R451 1K
D355
CCIR 5V
SWD 12V
D351
NTSC 5V
EP/LP 5V
REC 0.06 Vp-p
R445 10K
Q405
Q457
C453 0.01
R477 15K
C454 0.01
C617 47/6.3
C611 0.01
R442 15K
R479 2.2K
R478 10K
R452 680
R430 680
R421 10K
REC 0.08 Vp-p
R634 10K
R637 15K
Q607
Q608
Q411
Q319
R347 15K
C426 0.01
R639 2.2K
R640 2.2K
C607 0.01
R635 15K
R636 2.2K
R638 10K
R422 15K
C638 0.01
C606 0.01
C326 0.01
R348 10K
R322 360
R658 810
Q319,Q405,Q411,Q457 2SC1740S(QRS)
Q607,Q608 2SC1740S(RS)
R452 SECAM SP REC COLOR
R430 SECAM LP REC COLOR
IC405 NJM2234S
PB 0.2 Vp-p
C439 0.01
C436 0.01
C422 0.01
R441 4.7K
R439 2.2K
R420 5.6K
R440 18K
D629
D634
D628
R443 18K
C435 47/6.3
C434 0.01
C423 0.01
TP416
R438 82
L403 100
R436 1K
R434 47K
Q404
Q403
C432 0.01
R432 330
C433 0.01
R437 1K
R435 22K
R433 220
R432 DELAY COLOR LEVEL
DL401
C431 0.01
TP408
R431 560
L405 15
L404 15
Q404,Q403 2SC1740S(QRS)
PB 0.2 Vp-p
PB 0.3 Vp-p
SWD 5V
Q601
R612 39K
R614 15K
R613 6.8K
D607
Q602
D608
Q603
R616 6.8K
D609
Q622
R615 39K
R660 3.3K
R659 10K
D627
Q615
Q616
R601 39K
R602 10K
D601
D626
Q617
D602
R605 10K
Q618
R606 39K
R607 10K
D603
R608 10K
R609 10K
Q620
Q619
D604
D605
R463 39K
Q456
R351 1K
R459 3.9K
Q402
D409
D410
Q625
D633
C640 47/6.3
Q624
R667 10K
D632
PB 5V
SP 5V
Q601,Q603 2SA1309R,S
Q602,Q619 DTC124ES
Q622 DTC144ES
Q615,Q618 2SB643R,S
Q616,Q620 DTA144ES
Q617 DTC144WS
Q456 2SA1309R,S
Q402 DTA124ES
Q625 DTC144ES
Q624 DTA144ES
5
4
3
2
1
A
B
C
D
E
F
G
H

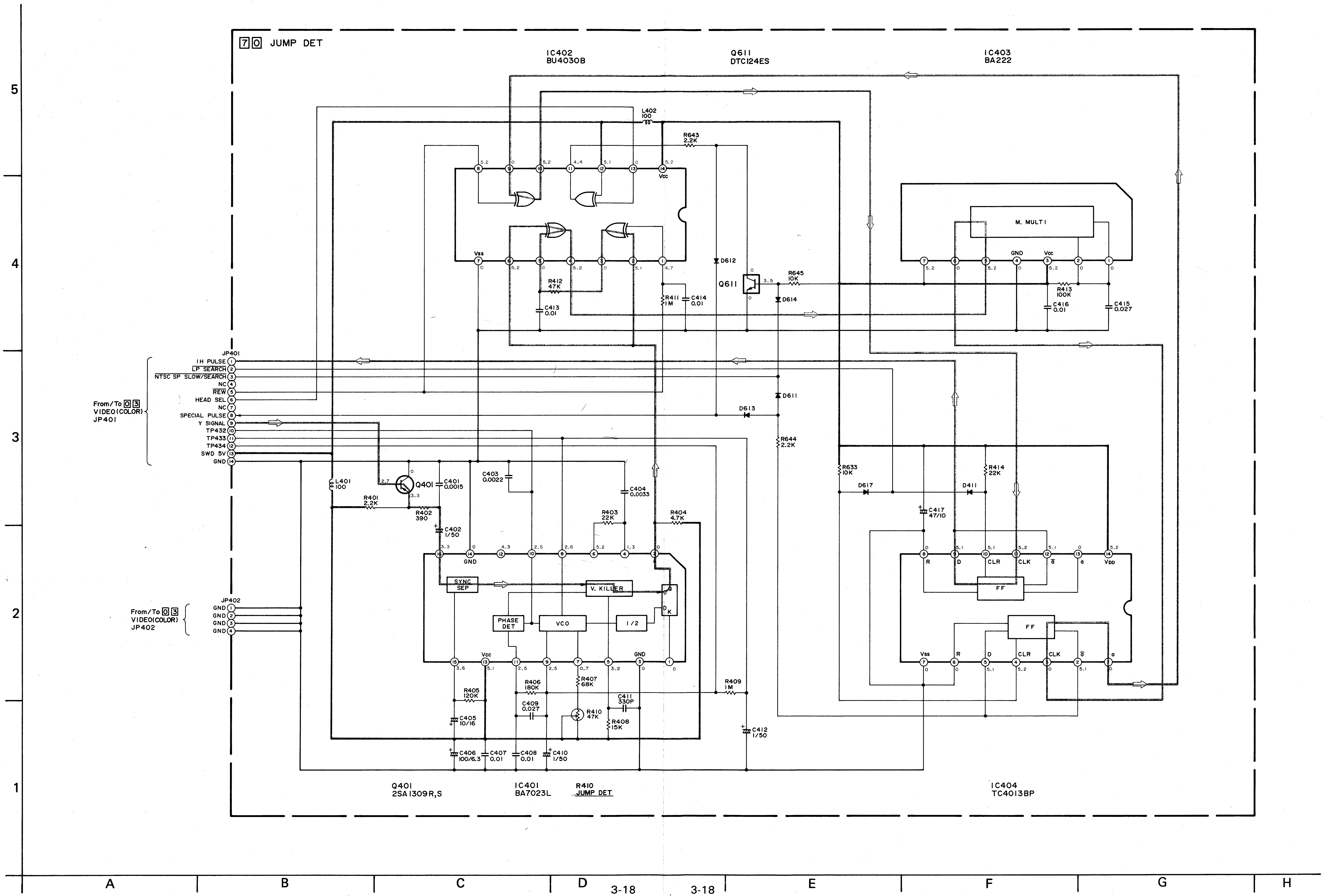
3.17 VIDEO —Color Section— (MAIN) SCHEMATIC DIAGRAM (2)

NOTE: Shaded (▨) parts are critical for safety. Replace only with specified part numbers.



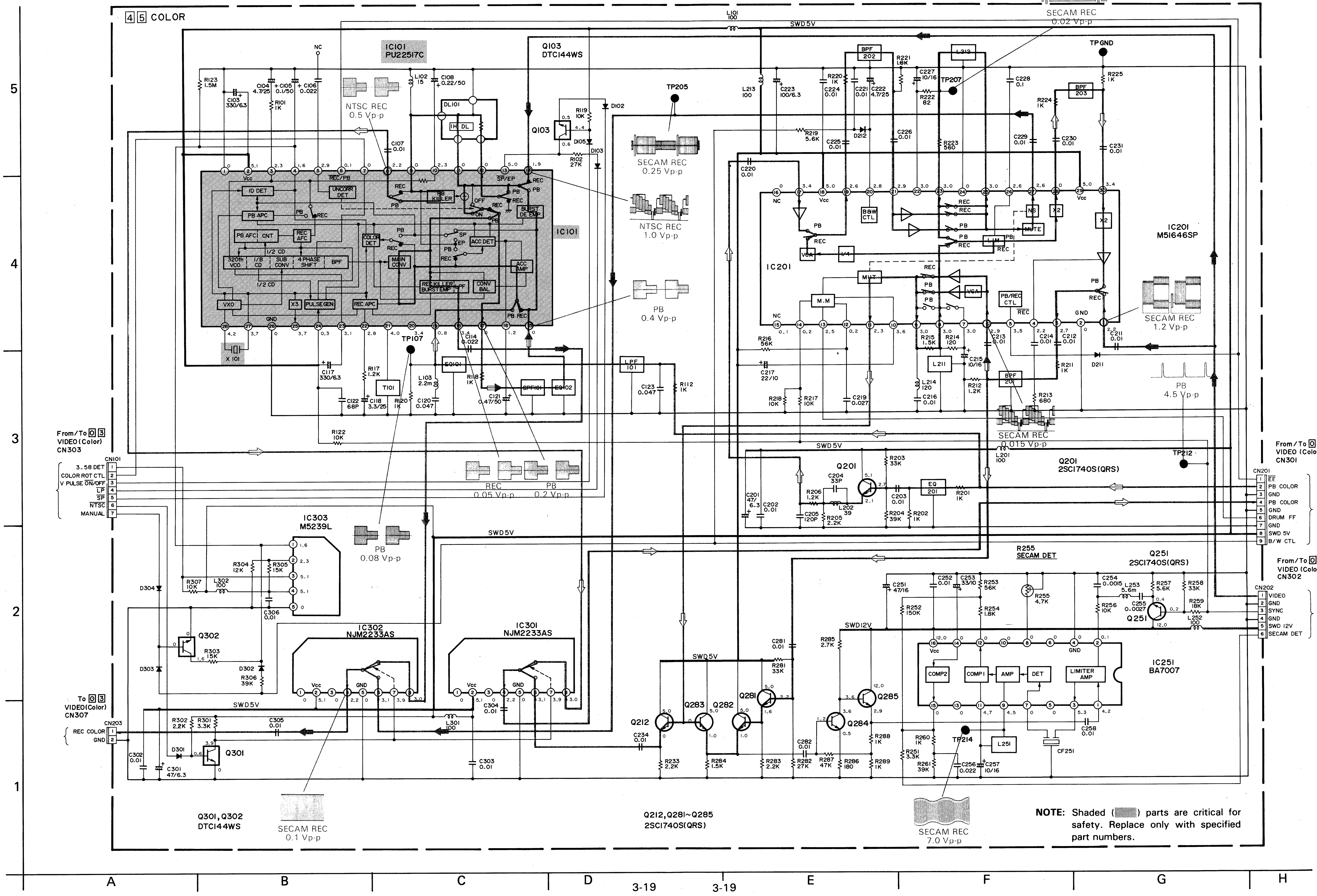
Q604,Q605 2SC1740S(RS)
Q315 DTC144WS
Q621 DTA144ES
Q351 2SC1740S(QRS)
Q313,Q316,Q314 DTC144ES
IC601 NJM2234S
IC351 BA7007
IC603 NJM2233AS
IC751 M50255P
Q623 2SC1740S(QRS)
Q317 2SC1740S(QRS)
SWD12V
SWD5V
REC/PB 0.4 Vp-p
REC/PB 1.0 Vp-p
PB 0.4Vp-p
PB 0.3 Vp-p
PB 1.2 Vp-p
R355 MESECAM DET(1)
COMP2
COMP1
AMP
DET
LIMITER AMP
TP314
TP432
TP433
TP434
CF351
L351
DL601
DL301
B/W
COLOR
UNSW 12V
GND
VIDEO
SWD 12V
AUDIO
To RF CONVERTER MIX BOOSTER
AVI AUDIO
From 03 AUDIO(MAIN)
CN309
UNSW 12V
SWD 12V
SWD 5V
GND
From 04 REGULATOR (MECHACON) CN2
CN302
VIDEO
GND
SYNC
GND
SWD 12V
SECAM DET
From/To 45 COLOR CN202
CN301
EE
PB COLOR
GND
PB COLOR
GND
DRUM FF
GND
SWD 5V
B/W CTL
From/To 45 COLOR CN201
JP401
IH PULSE
LP SEARCH
NTSC SP S/S
NC
REW
HEAD SELECT
NC
SPECIAL PULSE
Y SIGNAL
TP 432
TP 433
TP 434
SWD 5V
GND
From/To 70 JUMP DET JP401
CN306
REC START
V PULSE ON
NTSC
MANUAL
SRL DATA
SRL CLOCK
SECAM DET
MESECAM DET
NTSC 3.58DET
V SYNC
From/To 04 MECHACON CN609
CN303
3.58DET
COLOR ROT CTL
V PULSE ON/OFF
LP
SP
NTSC
MANUAL
From/To 45 COLOR CN101
J1
REC
REC START
EE
SWD 12V
AUDIO MUTE
SP
To 03 AUDIO J1
CN401
VIDEO
GND
AUDIO
GND
From 07 IF CN1
VA1 AUDIO
VA2 TNR/AUX
VA3 NTSC
To 03 AUDIO(MAIN)
VIDEO OUT
VIDEO IN
CN308
SWD 5V
SHARPNESS CTL
SHARPNESS MAX
TNR/AUX
From/To 20 TIMER CN7
JP402
GND
To 70 JUMP DET J402
SECAM CY5
3.58NTSC CY29
MUTE CY34
REC CY7
REC START CY6
VIDEO CY9
NTSC SP S/S CY33
V SYNC YC11
VIDEO CY19
SKEW COMP PULSE CY30
COLOR ROT CTL YC1
VIDEO YC10
V PULSE ON CY21
VIDEO CY20
Y SIGNAL YC4
SHARPNESS CTL CY31
SHARPNESS MAX YC6
TNR/AUX YC2
VIDEO MUTE
NTSC 4.43
EE
MESECAM
LP SEARCH
NTSC 3.58
SP
NC
Vcc
REC
AUDIO MUTE
LP
NTSC SP SEARCH
NTSC SP S/S
REW
PAL
CLK
S.DATA
GND
R617 2.2K
R618 39K
R619 1.8K
R620 4.7K
R621 10K
R622 2.7K
R623 39K
R630 56K
L313 100
D606
D610
D621
D622
D623
D624
D625
D630
D631
D615
D618
D302
D303
C323 4.7/50
C322 1/50
C324 4.7/50
R321 10K
R320 10K
R661 10K
R663 3.9K
R626 390
R627 330
R647 6.8K
R646 6.8K
C608 0.01
C609 0.01
C612 47/6.3
C613 0.01
C610 0.01
C352 0.01
C353 33/10
R353 56K
R354 1.8K
R355 4.7K
C354 0.0018
R356 10K
C351 47/16
L353 5.6m
R352 150K
R359 33K
R358 33K
R357 5.6K
C355 0.027
C356 0.022
R360 1K
C357 10/16
R361 39K
C358 0.01
L602 100
L352 100
L751 100
C751 47/6.3
C602 0.01
C603 0.01
L601 100
C604 0.01
C605 47/6.3
R631 5.6K
C639 0.01
R665 18K
R664 47K
R666 1.2K
R334 1K
R335 1.2K
C333 0.01
R629 1.2K
R628 270
C601 0.01
R336 470
L314 15
C334 0.001
R337 1.5K
R339 6.8K
R341 180
C336 0.01
C335 47/10
R338 22K
R340 1K
L315 82
C337 5.6P
L316 100
R662 10K
A
B
C
D
E
F
G
H
1
2
3
4
5

3.18 JUMP DET SCHEMATIC DIAGRAM



70 JUMP DET
IC402
BU4030B
Q611
DTC124ES
IC403
BA222
L402
100
R643
2.2K
Vcc
Vss
R412
47K
C413
0.01
R411
1M
C414
0.01
D612
Q611
R645
10K
D614
M. MULTI
GND
R413
100K
C416
0.01
C415
0.027
JP401
1H PULSE
LP SEARCH
NTSC SP SLOW/SEARCH
NC
REW
HEAD SEL
NC
SPECIAL PULSE
Y SIGNAL
TP432
TP433
TP434
SWD 5V
GND
From/To 03
VIDEO(COLOR)
JP401
D611
D613
R644
2.2K
R633
10K
D617
D411
R414
22K
C417
47/10
L401
100
Q401
C401
0.0015
R401
2.2K
R402
390
C402
1/50
C403
0.0022
C404
0.0033
R403
22K
R404
4.7K
SYNC
SEP
V. KILLER
PHASE
DET
VCO
1/2
R
D
CLR
CLK
VDD
FF
JP402
GND
From/To 03
VIDEO(COLOR)
JP402
R405
120K
C405
10/16
R406
180K
C409
0.027
R407
68K
R410
47K
C411
330P
R408
15K
R409
1M
C412
1/50
C406
100/6.3
C407
0.01
C408
0.01
C410
1/50
Q401
2SA1309R,S
IC401
BA7023L
R410
JUMP DET
IC404
TC4013BP
1
2
3
4
5
A
B
C
D
E
F
G
H

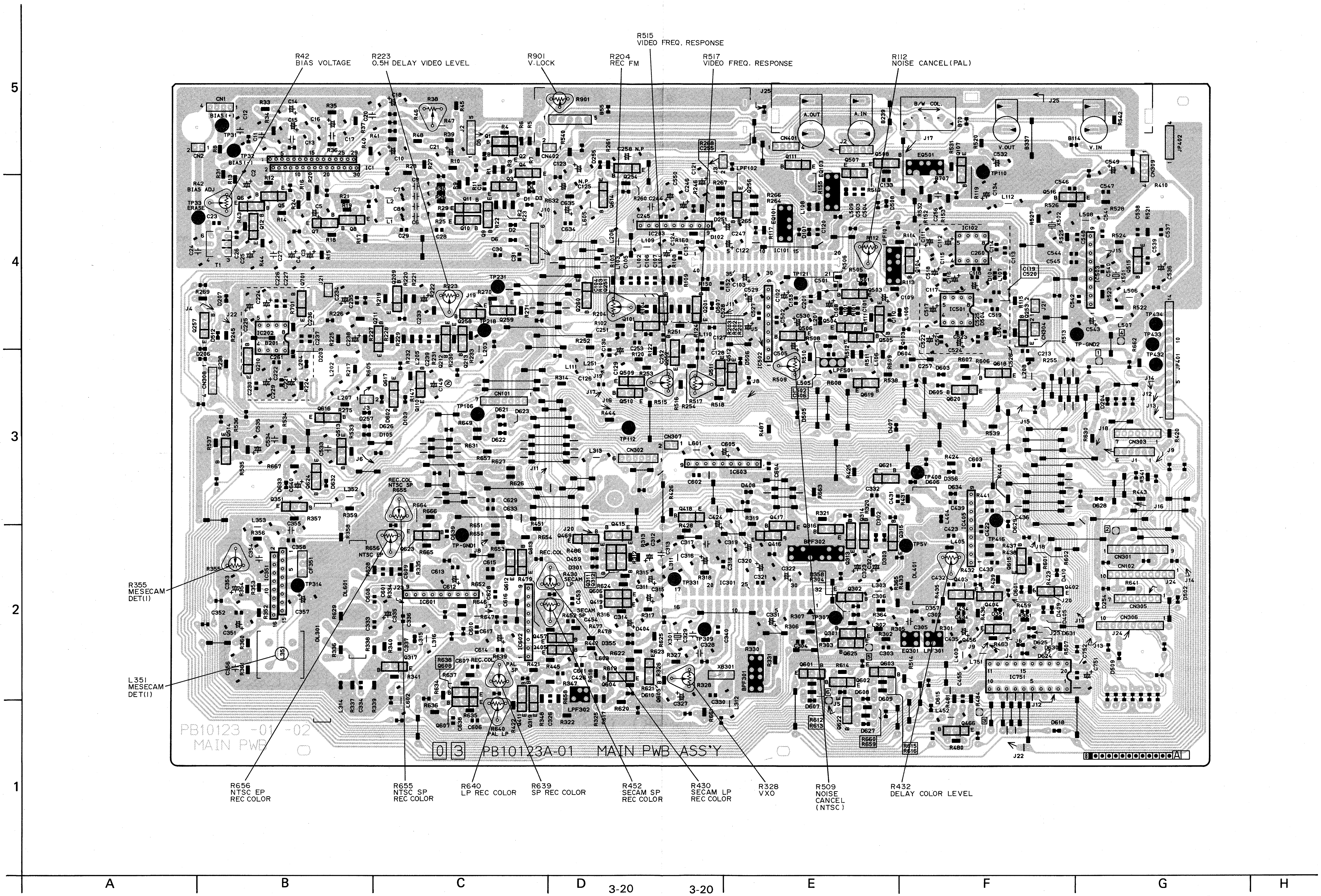
3.19 COLOR SCHEMATIC DIAGRAM



4 5 COLOR
IC101
PU22517C
Q103
DTC144WS
IC201
M51646SP
IC303
M5239L
IC302
NJM2233AS
IC301
NJM2233AS
IC251
BA7007
Q201
2SC1740S(QRS)
Q251
2SC1740S(QRS)
Q301,Q302
DTC144WS
Q212,Q281~Q285
2SC1740S(QRS)
R255
SECAM DET
NTSC REC
0.5 Vp-p
SECAM REC
0.25 Vp-p
NTSC REC
1.0 Vp-p
PB
0.4 Vp-p
SECAM REC
0.02 Vp-p
SECAM REC
1.2 Vp-p
PB
4.5 Vp-p
SECAM REC
0.015 Vp-p
REC
0.05 Vp-p
PB
0.2 Vp-p
PB
0.08 Vp-p
SECAM REC
0.1 Vp-p
SECAM REC
7.0 Vp-p
TP205
TP207
TPGND
TP107
TP212
TP214
From/To 0 3
VIDEO (Color)
CN303
CN101
3.58 DET
COLOR ROT CTL
V PULSE ON/OFF
LP
SP
NTSC
MANUAL
From/To 0 3
VIDEO (Color)
CN301
CN201
EE
PB COLOR
GND
PB COLOR
GND
DRUM FF
GND
SWD 5V
B/W CTL
From/To 0 3
VIDEO (Color)
CN302
CN202
VIDEO
GND
SYNC
GND
SWD 12V
SECAM DET
To 0 3
VIDEO(Color)
CN307
CN203
REC COLOR
GND
SWD5V
SWD12V
X101
DL101
1H DL
ID DET
PB APC
PB AFC
CNT
REC AFC
320fH VCO
1/8 CD
SUB CONV
4 PHASE SHIFT
BPF
VXO
X3
PULSE GEN
REC APC
UNCORR DET
PB KILLER
COLOR DET
MAIN CONV
ACC DET
ACC AMP
BURST DE EMP
REC KILLER BURST EMP
LPF
CONV BAL
LPF101
EQ101
EQ102
BPF101
T101
BPF 202
BPF 203
BPF 201
EQ 201
L213
L211
L251
CF251
B&W CTL
VCA
MUTE
M.M
PB/REC CTL
LIM
NS
X2
1/4
COMP2
COMP1
AMP
DET
LIMITER AMP
1
2
3
4
5
A
B
C
D
E
F
G
H

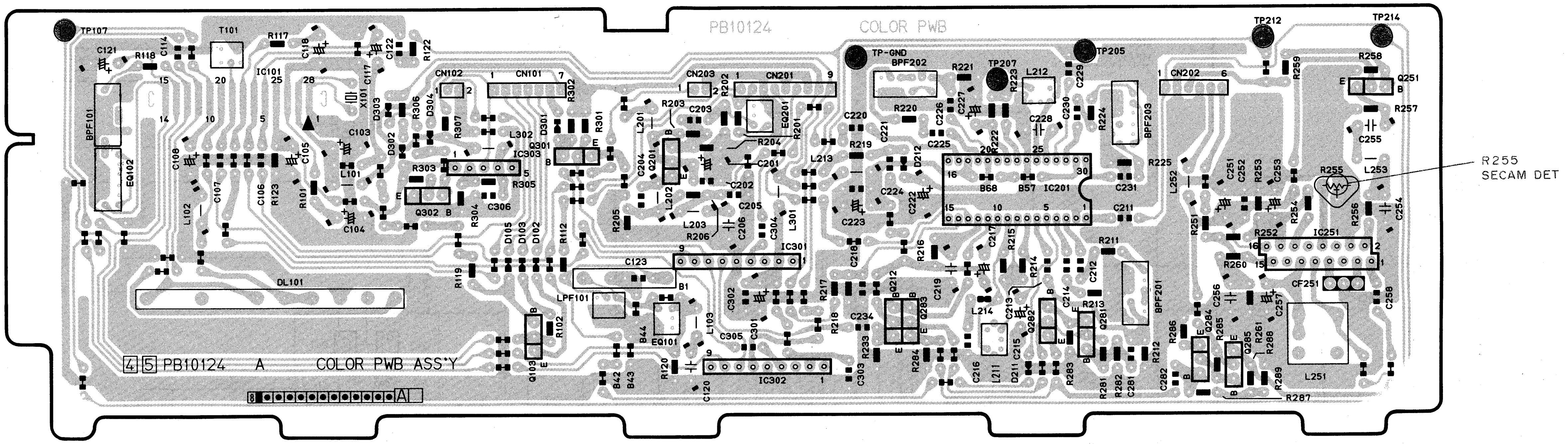
NOTE: Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

3.20 MAIN CIRCUIT BOARD

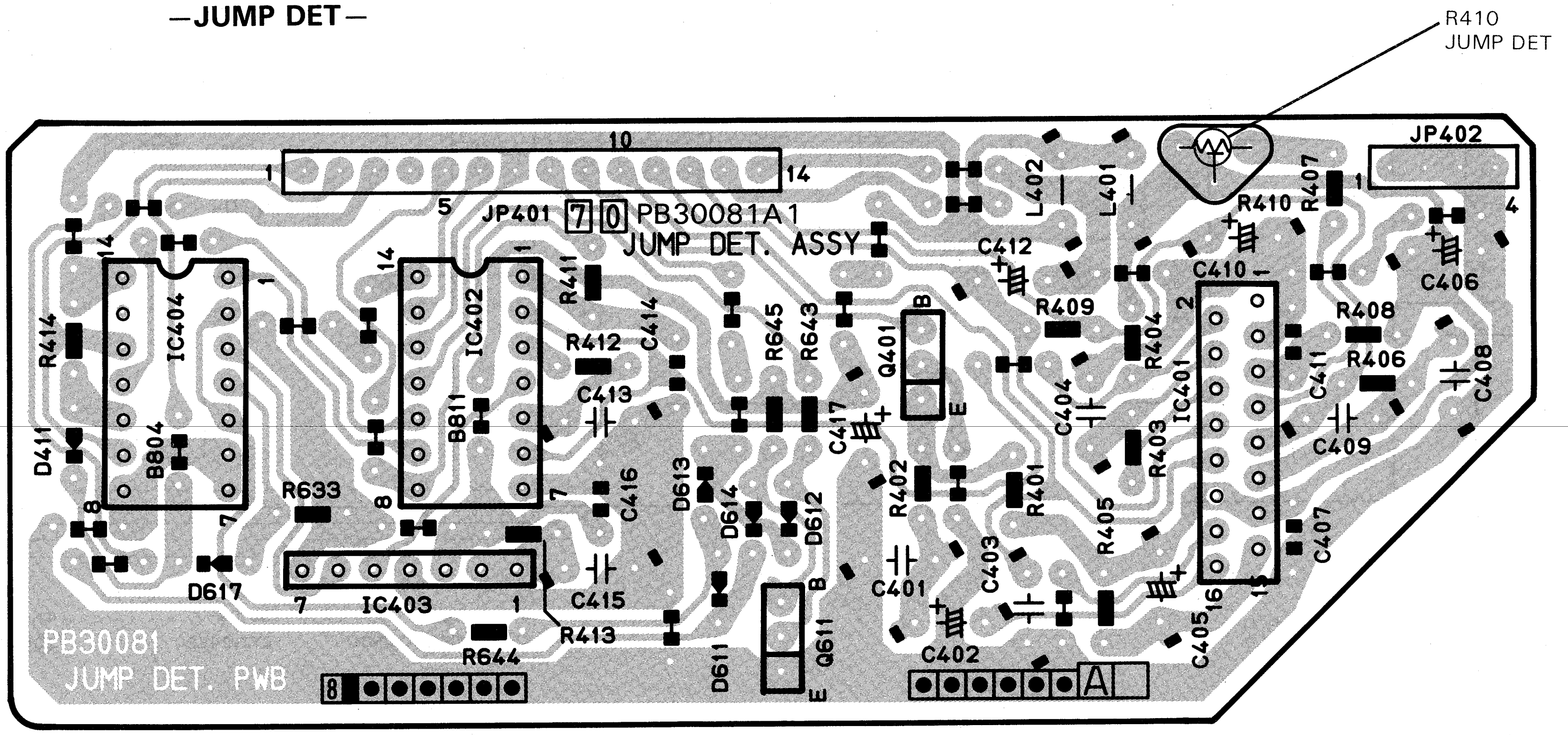

R515
VIDEO FREQ. RESPONSE
R42
BIAS VOLTAGE
R223
0.5H DELAY VIDEO LEVEL
R901
V.LOCK
R204
REC FM
R517
VIDEO FREQ. RESPONSE
R112
NOISE CANCEL(PAL)
R355
MESECAM
DET(1)
L351
MESECAM
DET(1)
R656
NTSC EP
REC COLOR
R655
NTSC SP
REC COLOR
R640
LP REC COLOR
R639
SP REC COLOR
R452
SECAM SP
REC COLOR
R430
SECAM LP
REC COLOR
R328
VXO
R509
NOISE
CANCEL
(NTSC)
R432
DELAY COLOR LEVEL
PB10123 -01 -02
MAIN PWB
03 PB10123A-01 MAIN PWB ASS'Y
5
4
3
2
1
A
B
C
D
E
F
G
H

3.21 COLOR CIRCUIT BOARD/JUMP DET CIRCUIT BOARD

–COLOR–


PB10124 COLOR PWB
4 5 PB10124 A COLOR PWB ASS'Y
TP107
T101
IC101
BPF101
EQ102
DL101
CN102
CN101
CN201
CN203
CN202
IC303
IC301
IC302
IC201
IC251
LPF101
EQ101
EQ201
BPF202
BPF203
BPF201
TP-GND
TP207
TP205
TP212
TP214
L251
CF251
R255
SECAM DET

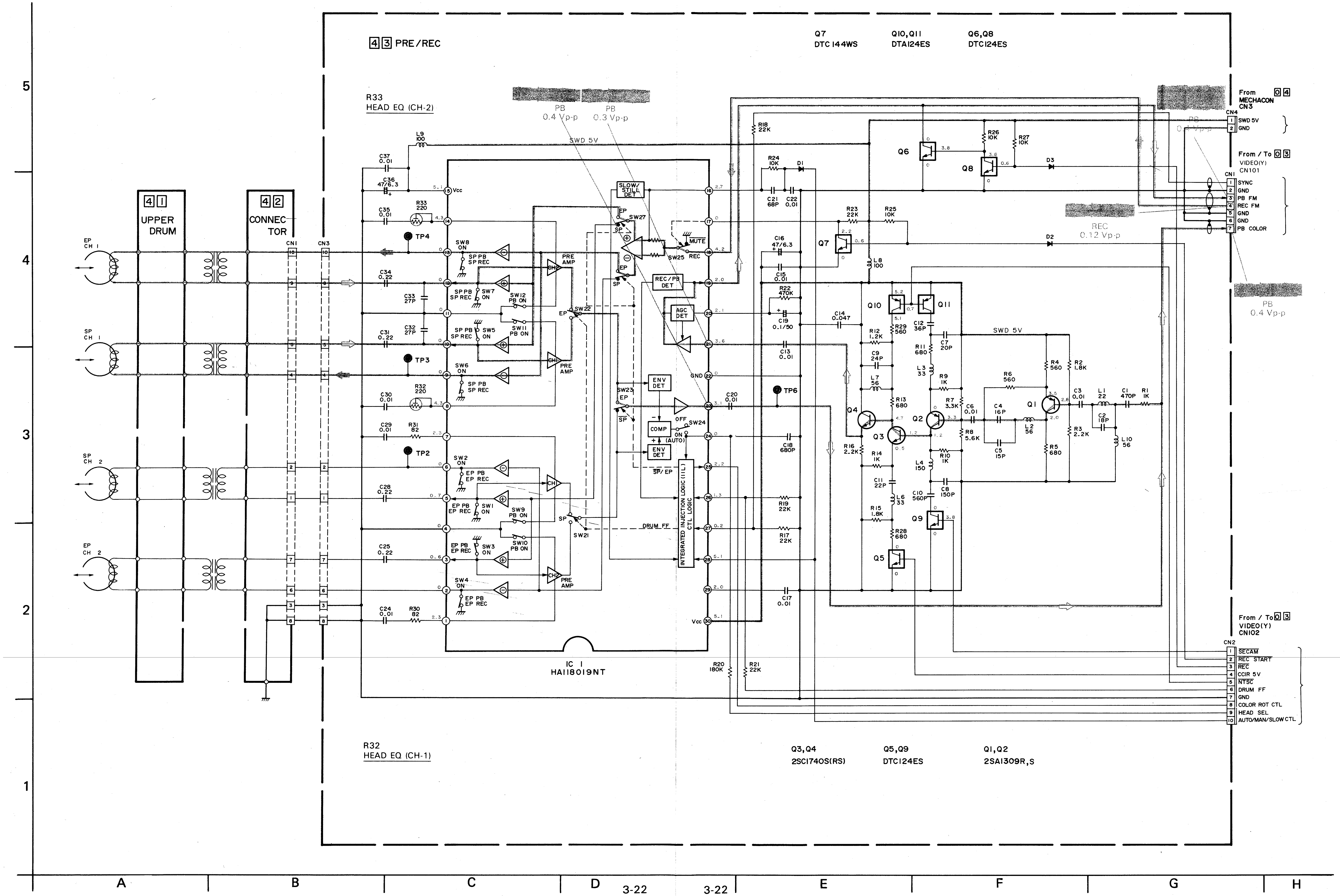
–JUMP DET–


R410
JUMP DET
JP401 7 0 PB30081A1
JUMP DET. ASSY
JP402
IC404
IC402
IC403
IC401
Q401
Q611
PB30081
JUMP DET. PWB

5
4
3
2
1

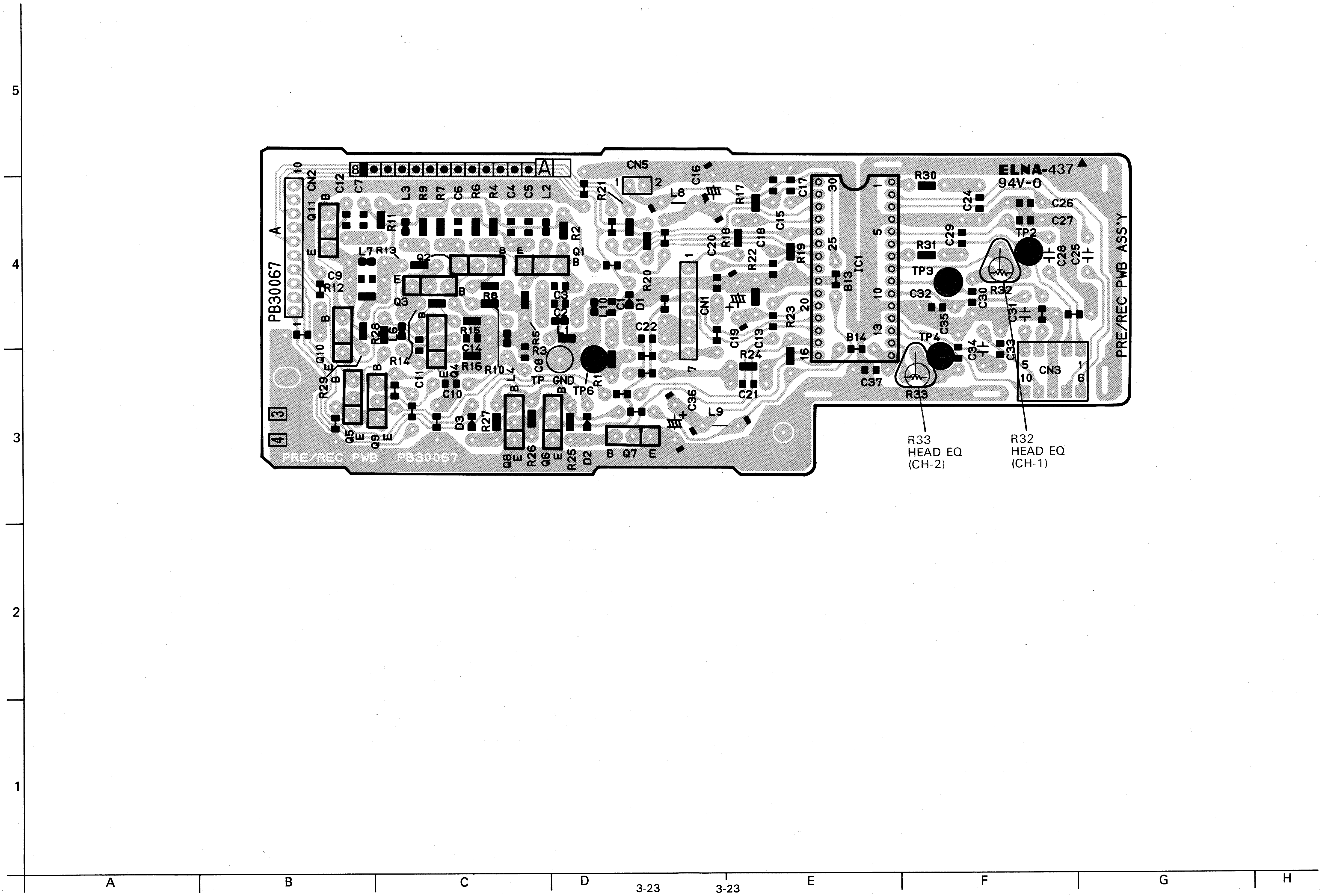
A B C D E F G H

3.22 PRE/REC SCHEMATIC DIAGRAM

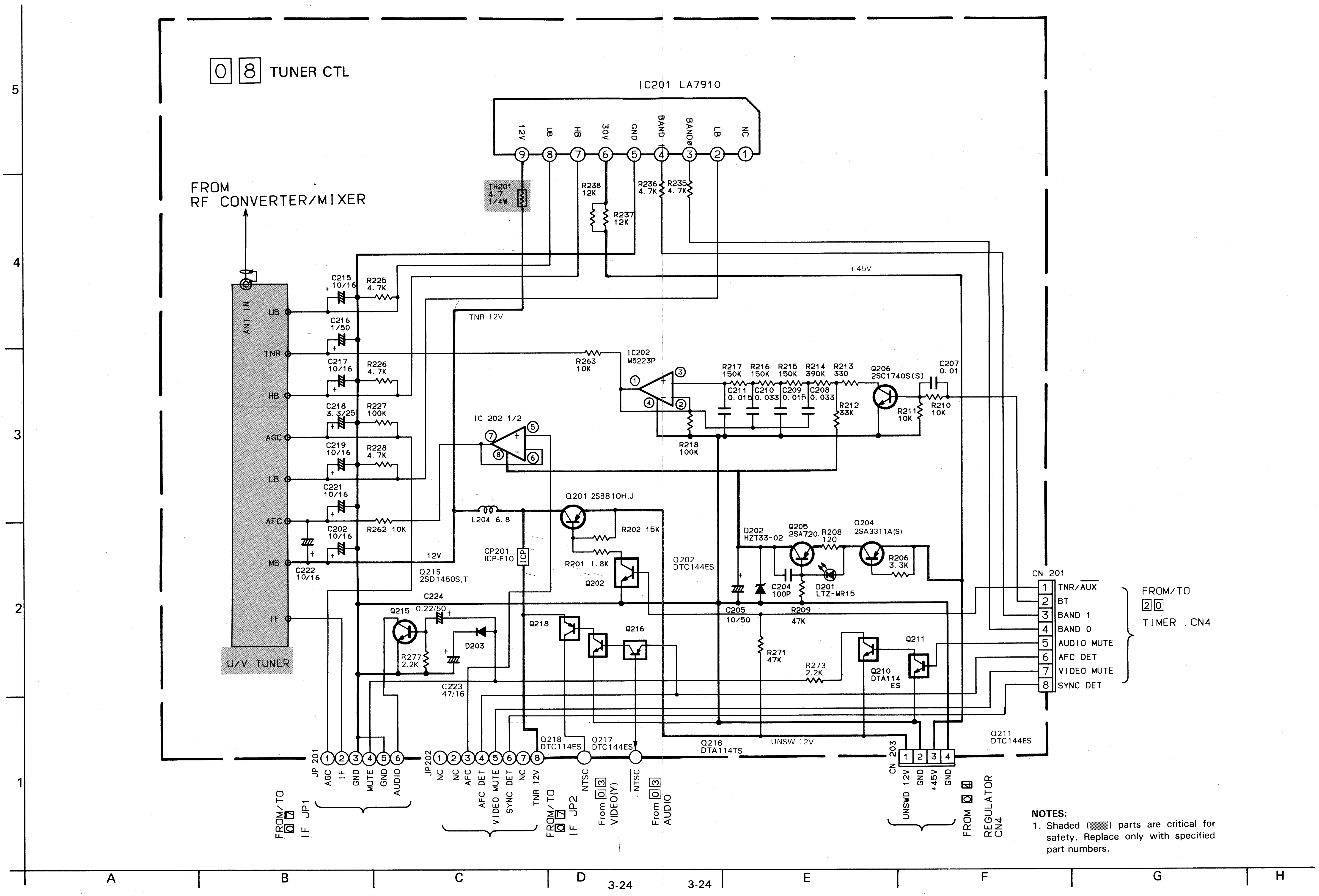


41 UPPER DRUM
42 CONNECTOR
43 PRE/REC
EP CH 1
SP CH 1
SP CH 2
EP CH 2
CN1
CN3
R33 HEAD EQ (CH-2)
R32 HEAD EQ (CH-1)
IC 1 HA118019NT
PB 0.4 Vp-p
PB 0.3 Vp-p
REC 0.12 Vp-p
PB 0.4 Vp-p
SWD 5V
SLOW/STILL DET
REC/PB DET
AGC DET
ENV DET
COMP
MUTE
PRE AMP
INTEGRATED INJECTION LOGIC (IIL) CTL LOGIC
DRUM FF
SP/EP
TP2
TP3
TP4
TP6
Q7 DTC144WS
Q10,Q11 DTA124ES
Q6,Q8 DTC124ES
Q3,Q4 2SC1740S(RS)
Q5,Q9 DTC124ES
Q1,Q2 2SA1309R,S
From 04 MECHACON CN3
CN4
1 SWD 5V
2 GND
From / To 03 VIDEO(Y) CN101
CN1
1 SYNC
2 GND
3 PB FM
4 REC FM
5 GND
6 GND
7 PB COLOR
From / To 03 VIDEO(Y) CN102
CN2
1 SECAM
2 REC START
3 REC
4 CCIR 5V
5 NTSC
6 DRUM FF
7 GND
8 COLOR ROT CTL
9 HEAD SEL
10 AUTO/MAN/SLOW CTL
A
B
C
D
E
F
G
H
1
2
3
4
5

3.23 PRE/REC CIRCUIT BOARD


5
4
3
2
1
A
B
C
D
E
F
G
H
PB30067
PRE/REC PWB PB30067
ELNA-437
94V-0
PRE/REC PWB ASS'Y
CN2
CN5
CN1
CN3
IC1
TP GND
TP2
TP3
TP4
TP6
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
R33
HEAD EQ
(CH-2)
R32
HEAD EQ
(CH-1)

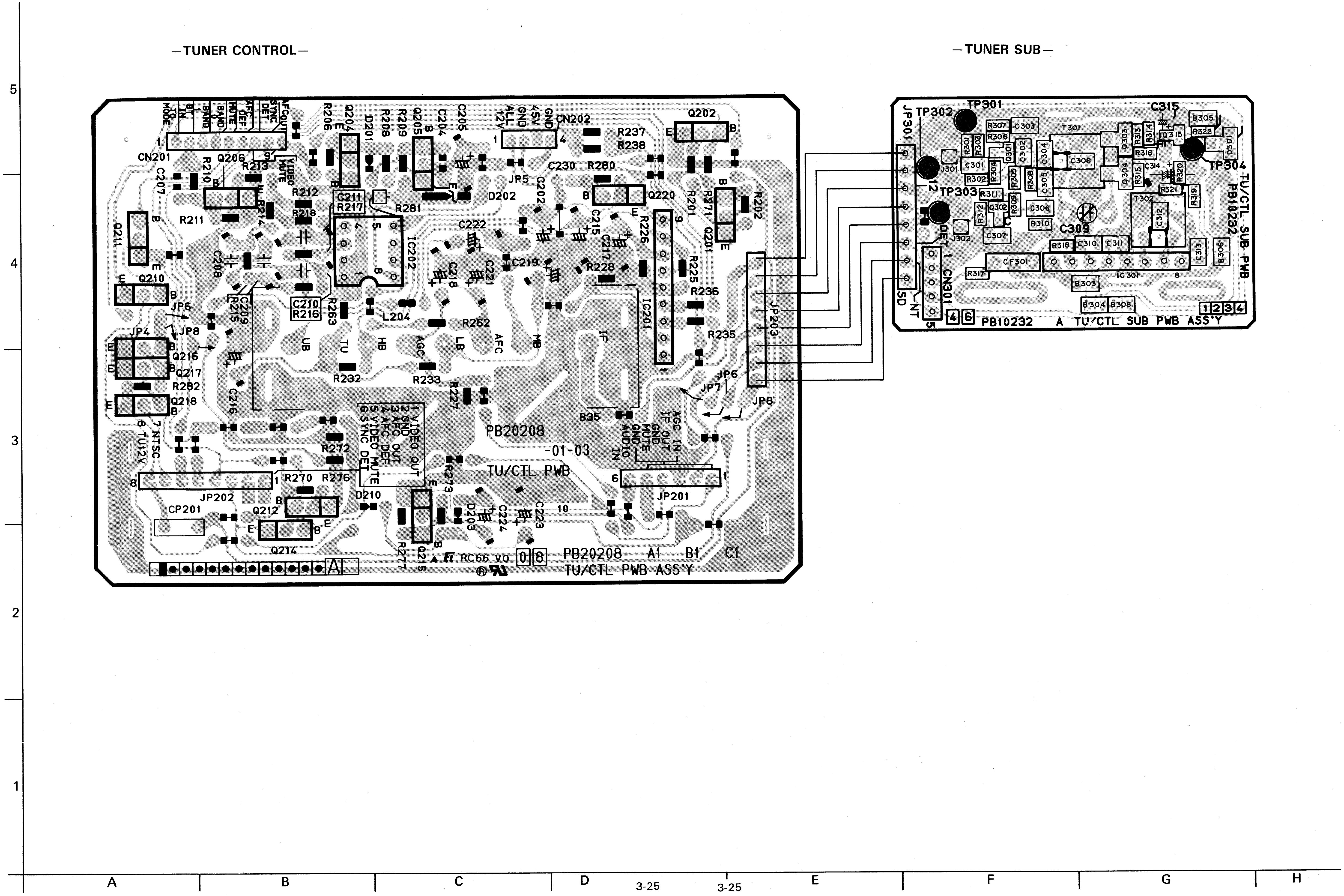
3.24 TUNER CONTROL SCHEMATIC DIAGRAM


08 TUNER CTL
IC201 LA7910
12V
UB
HB
30V
GND
BAND 1
BANDØ
LB
NC
TH201 4.7 1/4W
R238 12K
R237 12K
R236 4.7K
R235 4.7K
FROM RF CONVERTER/MIXER
ANT IN
UB
TNR
HB
AGC
LB
AFC
MB
IF
U/V TUNER
C215 10/16
R225 4.7K
C216 1/50
C217 10/16
R226 4.7K
C218 3.3/25
R227 100K
C219 10/16
R228 4.7K
C221 10/16
C202 10/16
R262 10K
C222 10/16
TNR 12V
+45V
R263 10K
IC202 M5223P
R217 150K
R216 150K
R215 150K
R214 390K
R213 330
C211 0.015
C210 0.033
C209 0.015
C208 0.033
R212 33K
Q206 2SC1740S(S)
C207 0.01
R211 10K
R210 10K
R218 100K
IC 202 1/2
Q201 2SB810H,J
L204 6.8
R202 15K
R201 1.8K
CP201 ICP-F10
Q202
Q202 DTC144ES
12V
Q215 2SD1450S,T
C224 0.22/50
Q215
R277 2.2K
D203
C223 47/16
Q218
Q216
D202 HZT33-02
Q205 2SA720
R208 120
Q204 2SA3311A(S)
R206 3.3K
C204 100P
D201 LTZ-MR15
C205 10/50
R209 47K
R271 47K
R273 2.2K
Q211
Q210 DTA114ES
CN 201
1 TNR/AUX
2 BT
3 BAND 1
4 BAND 0
5 AUDIO MUTE
6 AFC DET
7 VIDEO MUTE
8 SYNC DET
FROM/TO 20 TIMER, CN4
JP 201
AGC
IF
GND
MUTE
GND
AUDIO
FROM/TO 07 IF JP1
JP202
NC
NC
AFC
AFC DET
VIDEO MUTE
SYNC DET
NC
TNR 12V
FROM/TO 07 IF JP2
Q218 DTC114ES
Q217 DTC144ES
NTSC
From 03 VIDEO(Y)
NTSC
From 03 AUDIO
Q216 DTA114TS
UNSW 12V
CN 203
UNSWD 12V
GND
+45V
GND
FROM 04 REGULATOR CN4
Q211 DTC144ES
1
2
3
4
5
A
B
C
D
E
F
G
H

NOTES:

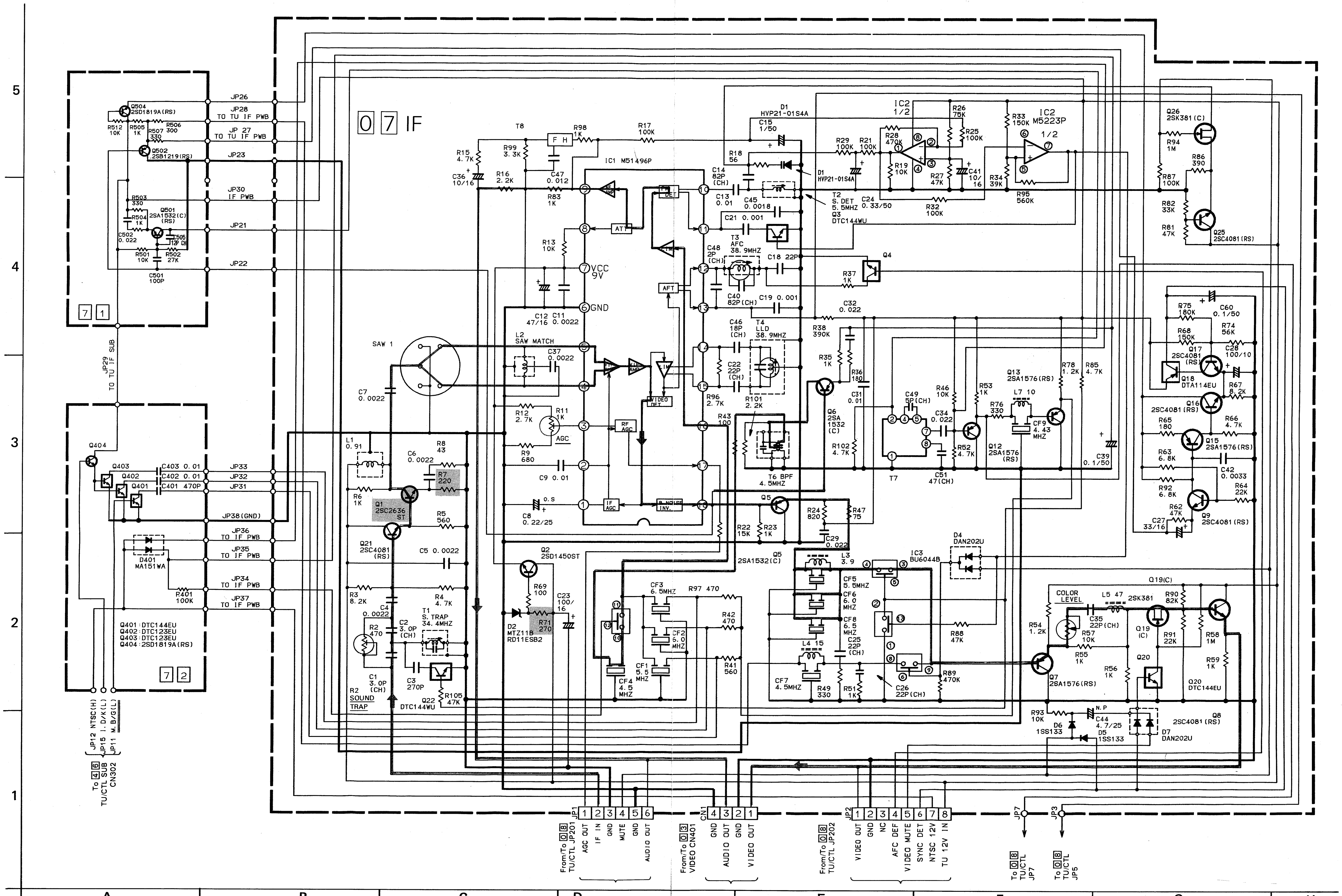
1. Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

3.25 TUNER CONTROL/TUNER SUB CIRCUIT BOARD

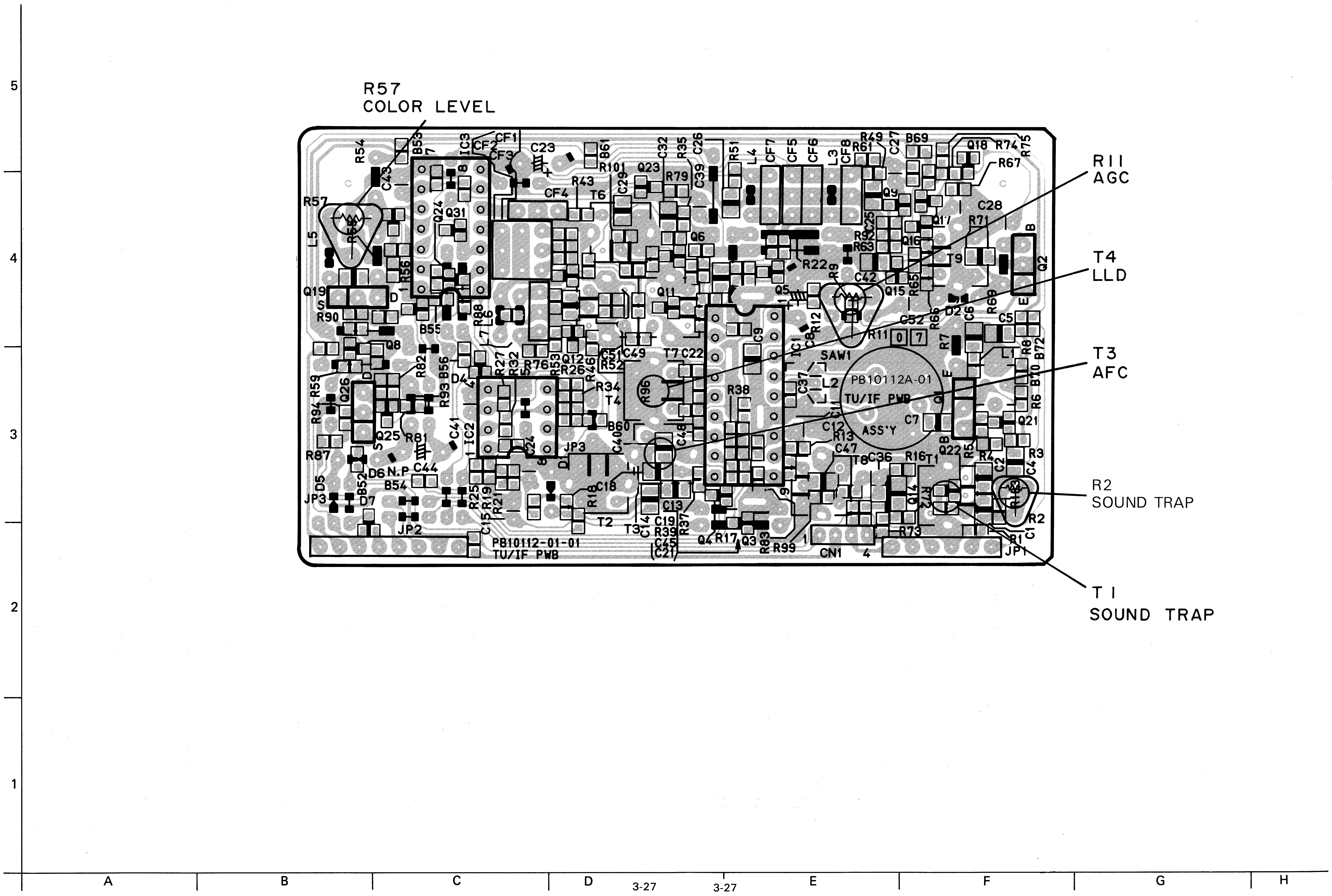


—TUNER CONTROL—
—TUNER SUB—
PB20208
-01-03
TU/CTL PWB
PB20208 A1 B1 C1
TU/CTL PWB ASS'Y
RC66 VO
CN201
CN202
IC201
IC202
JP201
JP202
JP203
JP4
JP5
JP6
JP7
JP8
CP201
Q201
Q202
Q204
Q205
Q206
Q210
Q211
Q212
Q214
Q215
Q216
Q217
Q218
Q220
D201
D202
D203
D210
L204
1 VIDEO OUT
2 GND
3 AFC OUT
4 AFC DEF
5 VIDEO MUTE
6 SYNC DET
7 NTSC
8 TU12V
AGC IN
IF OUT
GND
MUTE
GND
AUDIO IN
MODE
BT IN
BAND
BAND
MUTE
AFC DEF
SYNC DET
AFC OUT
12V
ALL
GND
45V
GND
VIDEO MUTE
UB
TU
HB
AGC
LB
AFC
MB
IF
B35
PB10232 A TU/CTL SUB PWB ASS'Y
TU/CTL SUB PWB
PB10232
JP301
TP301
TP302
TP303
TP304
CN301
IC301
T301
T302
CF301
J301
J302
Q301
Q302
Q303
Q304
Q315
D301
C309
C315
DET
NT
SD
A
B
C
D
E
F
G
H
1
2
3
4
5

3.26 IF SCHEMATIC DIAGRAM

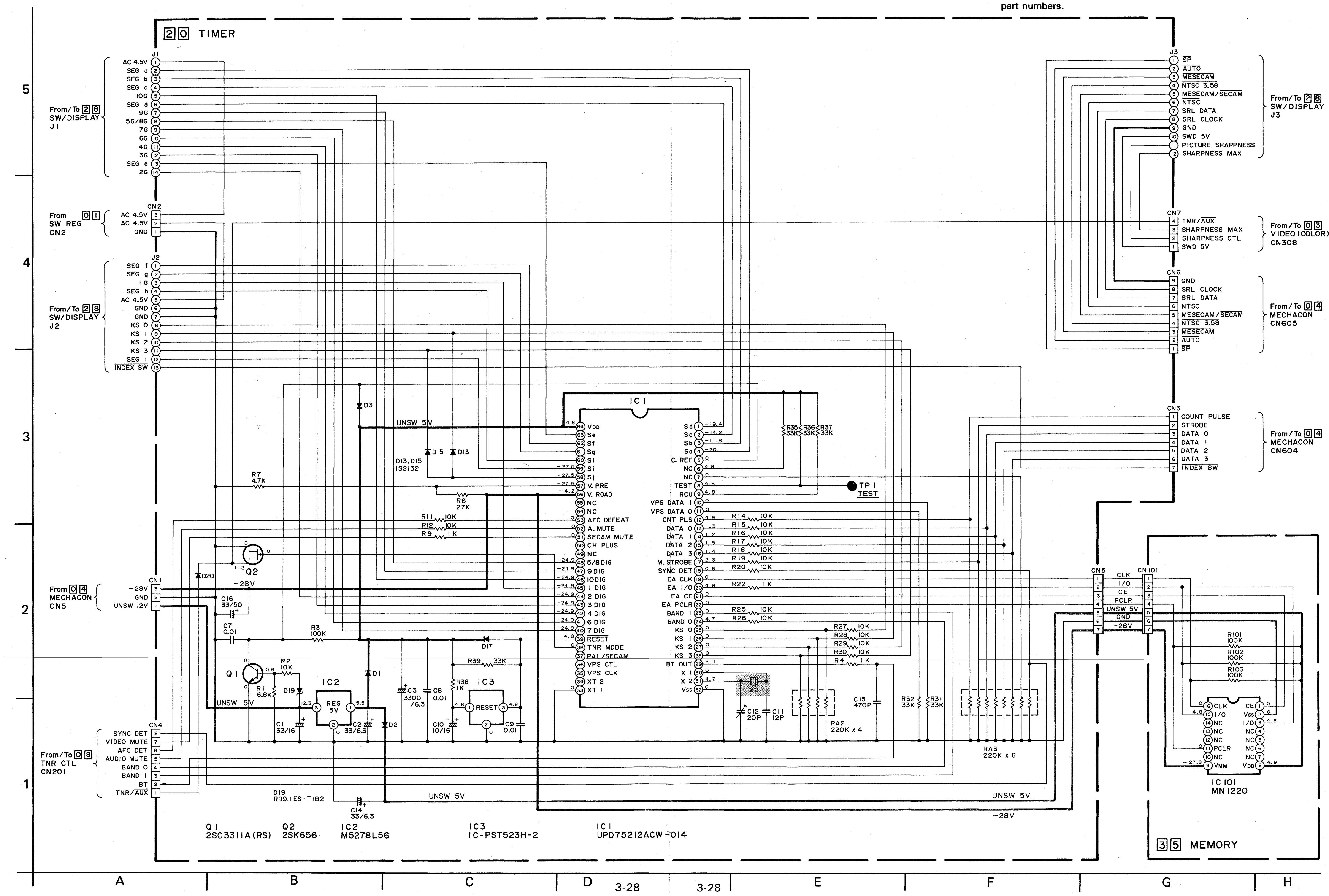

5
4
3
2
1
A
B
C
D
E
F
G
H
0 7 IF
7 1
7 2
Q504 2SD1819A(RS)
R512 10K
R505 1K
R507 330
R506 300
Q502 2SB1219(RS)
R503 330
R504 1K
Q501 2SA1532(C) (RS)
C502 0.022
C505 12P CH
R501 10K
R502 27K
C501 100P
JP26
JP28 TO TU IF PWB
JP 27 TO TU IF PWB
JP23
JP30 IF PWB
JP21
JP22
JP29 TO TU IF SUB
Q404
Q403
Q402
Q401
C403 0.01
C402 0.01
C401 470P
JP33
JP32
JP31
JP38(GND)
JP36 TO IF PWB
JP35 TO IF PWB
D401 MA151WA
R401 100K
JP34 TO IF PWB
JP37 TO IF PWB
Q401:DTC144EU
Q402:DTC123EU
Q403:DTC123EU
Q404:2SD1819A(RS)
JP12 NTSC(H)
JP15 I.D/K(L)
JP11 M.B/G(L)
To 4 6 TU/CTL SUB CN302
T8
F H
R98 1K
R17 100K
R15 4.7K
C36 10/16
R99 3.3K
R16 2.2K
C47 0.012
R83 1K
IC1 M51496P
R13 10K
VCC 9V
GND
C12 47/16
C11 0.0022
L2 SAW MATCH
C37 0.0022
SAW 1
C7 0.0022
R12 2.7K
R11 1K
AGC
R9 680
C9 0.01
C8 0.22/25
ATT
AFT
DET
RF AGC
IF AGC
VIDEO DET
N.NOISE INV.
L1 0.91
C6 0.0022
R8 43
R7 220
R6 1K
Q1 2SC2636 ST
R5 560
Q21 2SC4081 (RS)
C5 0.0022
R3 8.2K
C4 0.0022
R4 4.7K
T1 S. TRAP 34.4MHZ
R2 470
C2 3.0P (CH)
C1 3.0P (CH)
C3 270P
R105 47K
Q22 DTC144WU
R2 SOUND TRAP
Q2 2SD1450ST
R69 100
D2 MTZ11B RD11ESB2
R71 270
C23 100/16
D1 HYP21-01S4A
C15 1/50
R18 56
C14 82P (CH)
C13 0.01
C45 0.0018
C21 0.001
T2 S. DET 5.5MHZ
Q3 DTC144WU
C24 0.33/50
T3 AFC 38.9MHZ
C48 2P (CH)
C18 22P
C40 82P (CH)
C19 0.001
Q4
R37 1K
C32 0.022
C46 18P (CH)
T4 LLD 38.9MHZ
C22 22P (CH)
R38 390K
R35 1K
R36 180
C31 0.01
R96 2.7K
R101 2.2K
R43 100
T6 BPF 4.5MHZ
Q6 2SA1532 (C)
R102 4.7K
Q5
R24 820
R47 75
R22 15K
R23 1K
C29 0.022
Q5 2SA1532(C)
IC2 1/2
R26 75K
R25 100K
R28 470K
R29 100K
R21 100K
R19 10K
R27 47K
C41 10/16
R32 100K
R33 150K
IC2 M5223P 1/2
R34 39K
R95 560K
Q26 2SK381(C)
R94 1M
R86 390
R87 100K
R82 33K
R81 47K
Q25 2SC4081(RS)
C49 5P(CH)
R46 10K
C34 0.022
R53 1K
Q13 2SA1576(RS)
L7 10
R76 330
CF9 4.43 MHZ
R78 1.2K
R85 4.7K
C39 0.1/50
R52 4.7K
Q12 2SA1576 (RS)
T7
C51 47(CH)
R75 180K
C60 0.1/50
R68 150K
R74 56K
Q17 2SC4081 (RS)
C28 100/10
Q18 DTA114EU
R67 8.2K
Q16 2SC4081(RS)
R65 180
R66 4.7K
Q15 2SA1576(RS)
R63 6.8K
C42 0.0033
R92 6.8K
R64 22K
R62 47K
C27 33/16
Q9 2SC4081(RS)
CF3 6.5MHZ
R97 470
R42 470
CF2 6.0 MHZ
CF1 5.5 MHZ
CF4 4.5 MHZ
R41 560
L3 3.9
IC3 BU6044B
D4 DAN202U
CF5 5.5MHZ
CF6 6.0 MHZ
CF8 6.5 MHZ
C25 22P (CH)
L4 15
CF7 4.5MHZ
R49 330
R51 1K
C26 22P(CH)
R88 47K
R89 470K
Q19(C)
COLOR LEVEL
L5 47
2SK381
R90 82K
R54 1.2K
C35 22P(CH)
R57 10K
Q19 (C)
R91 22K
R58 1M
R55 1K
Q20
R59 1K
Q7 2SA1576(RS)
R56 1K
Q20 DTC144EU
R93 10K
N.P
C44 4.7/25
D6 1SS133
D5 1SS133
D7 DAN202U
Q8 2SC4081(RS)
JP1 1 2 3 4 5 6
AGC OUT
IF IN
GND
MUTE
GND
AUDIO OUT
From/To 0 8 TU/CTL JP201
CN1 4 3 2 1
GND
AUDIO OUT
GND
VIDEO OUT
From/To 0 3 VIDEO CN401
JP2 1 2 3 4 5 6 7 8
VIDEO OUT
GND
NC
AFC DEF
VIDEO MUTE
SYNC DET
NTSC 12V
TU 12V IN
From/To 0 8 TU/CTL JP202
JP7
To 0 8 TU/CTL JP7
JP3
To 0 8 TU/CTL JP5

3.27 IF CIRCUIT BOARD


R57
COLOR LEVEL
R11
AGC
T4
LLD
T3
AFC
R2
SOUND TRAP
T1
SOUND TRAP
PB10112-01-01
TU/IF PWB
PB10112A-01
TU/IF PWB
ASS'Y
SAW1
CN1
IC1
IC2
IC3
JP1
JP2
JP3
5
4
3
2
1
A
B
C
D
E
F
G
H

3.28 TIMER AND MEMORY SCHEMATIC DIAGRAMS

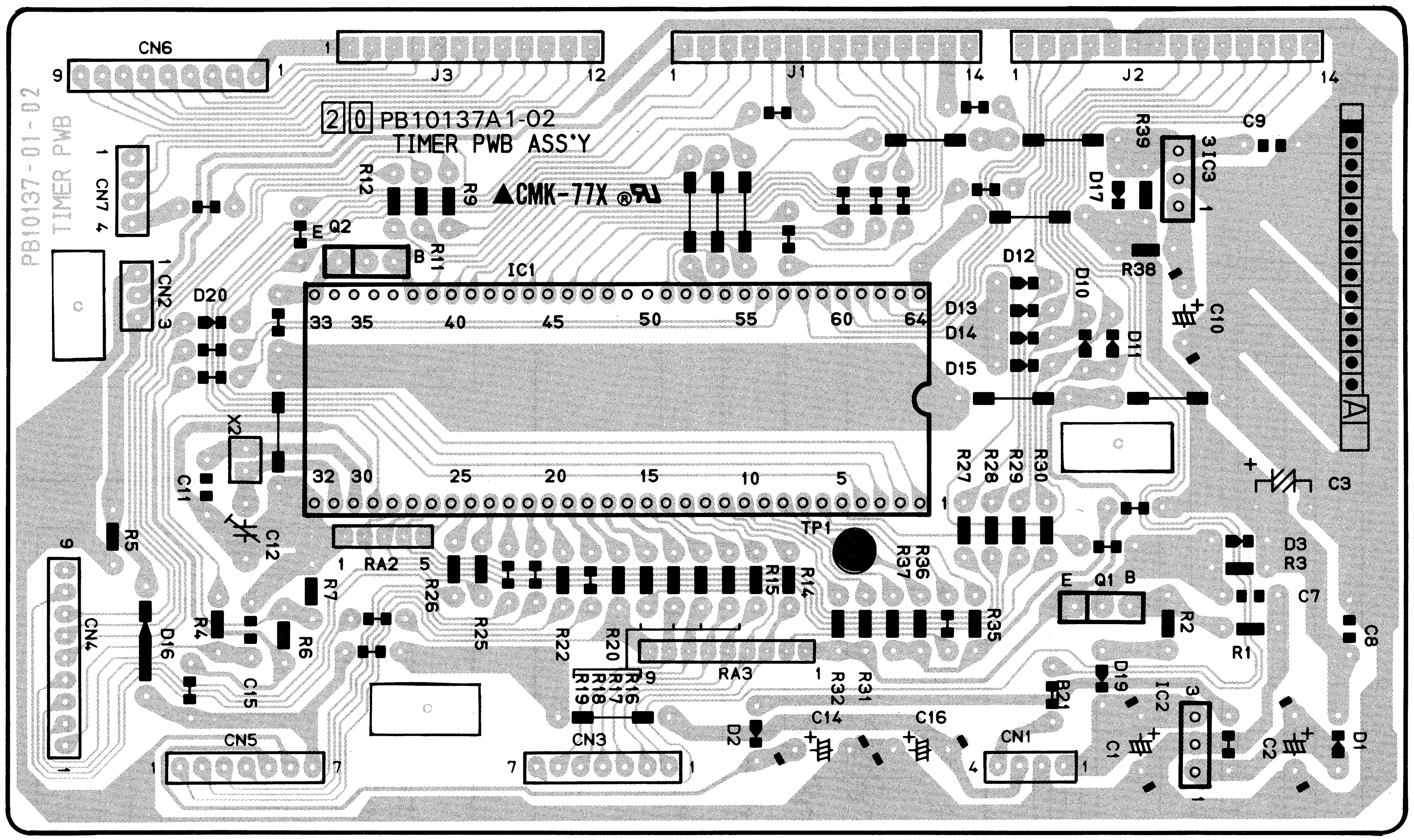
NOTE: Shaded (▨) parts are critical for safety. Replace only with specified part numbers.



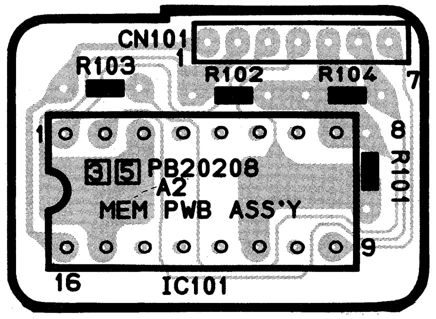
20 TIMER
J1
AC 4.5V ①
SEG a ②
SEG b ③
SEG c ④
10G ⑤
SEG d ⑥
9G ⑦
5G/8G ⑧
7G ⑨
6G ⑩
4G ⑪
3G ⑫
SEG e ⑬
2G ⑭
From/To 28 SW/DISPLAY J1
CN2
AC 4.5V 3
AC 4.5V 2
GND 1
From 01 SW REG CN2
J2
SEG f ①
SEG g ②
1G ③
SEG h ④
AC 4.5V ⑤
GND ⑥
GND ⑦
KS 0 ⑧
KS 1 ⑨
KS 2 ⑩
KS 3 ⑪
SEG i ⑫
INDEX SW ⑬
From/To 28 SW/DISPLAY J2
CN1
-28V 3
GND 2
UNSW 12V 1
From 04 MECHACON CN5
CN4
SYNC DET 8
VIDEO MUTE 7
AFC DET 6
AUDIO MUTE 5
BAND 0 4
BAND 1 3
BT 2
TNR/AUX 1
From/To 08 TNR CTL CN201
J3
① SP
② AUTO
③ MESECAM
④ NTSC 3.58
⑤ MESECAM/SECAM
⑥ NTSC
⑦ SRL DATA
⑧ SRL CLOCK
⑨ GND
⑩ SWD 5V
⑪ PICTURE SHARPNESS
⑫ SHARPNESS MAX
From/To 28 SW/DISPLAY J3
CN7
4 TNR/AUX
3 SHARPNESS MAX
2 SHARPNESS CTL
1 SWD 5V
From/To 03 VIDEO (COLOR) CN308
CN6
9 GND
8 SRL CLOCK
7 SRL DATA
6 NTSC
5 MESECAM/SECAM
4 NTSC 3.58
3 MESECAM
2 AUTO
1 SP
From/To 04 MECHACON CN605
CN3
1 COUNT PULSE
2 STROBE
3 DATA 0
4 DATA 1
5 DATA 2
6 DATA 3
7 INDEX SW
From/To 04 MECHACON CN604
IC1
4.8 64 VDD
63 Se
62 Sf
61 Sg
-27.5 60 Sl
-27.5 59 Si
-27.5 58 Sj
-27.5 57 V. PRE
-4.2 56 V. ROAD
55 NC
54 NC
0 53 AFC DEFEAT
0 52 A. MUTE
0 51 SECAM MUTE
50 CH PLUS
49 NC
-24.9 48 5/8DIG
-24.9 47 9DIG
-24.9 46 10DIG
-24.9 45 1 DIG
-24.9 44 2 DIG
-24.9 43 3 DIG
-24.9 42 4 DIG
-24.9 41 6 DIG
-24.9 40 7 DIG
4.8 39 RESET
0 38 TNR MODE
37 PAL/SECAM
36 VPS CTL
35 VPS CLK
34 XT 2
0 33 XT 1
Sd 1 -19.4
Sc 2 -14.2
Sb 3 -11.6
Sa 4 -20.1
C. REF 5 0
NC 6 4.8
NC 7 0
TEST 8 4.8
RCU 9 4.8
VPS DATA 1 10 0
VPS DATA 0 11 0
CNT PLS 12 4.9
DATA 0 13 1.3
DATA 1 14 1.2
DATA 2 15 1.5
DATA 3 16 1.4
M. STROBE 17 2.3
SYNC DET 18 0.6
EA CLK 19 0
EA I/O 20 4.8
EA CE 21 0
EA PCLR 22 0
BAND 1 23 0
BAND 0 24 4.7
KS 0 25 0
KS 1 26 0
KS 2 27 0
KS 3 28 0
BT OUT 29 2.1
X 1 30 0
X 2 31 4.7
Vss 32 0
R35 33K R36 33K R37 33K
TP1 TEST
R14 10K
R15 10K
R16 10K
R17 10K
R18 10K
R19 10K
R20 10K
R22 1K
R25 10K
R26 10K
R27 10K
R28 10K
R29 10K
R30 10K
R4 1K
X2
C12 20P
C11 12P
C15 470P
RA2 220K x 4
R32 33K
R31 33K
RA3 220K x 8
UNSW 5V
D3
D15 D13
D13, D15 1SS132
R7 4.7K
R6 27K
R11 10K
R12 10K
R9 1K
Q2
11.2
-28V
D20
C16 33/50
C7 0.01
R3 100K
D17
Q1
0.6
R2 10K
R1 6.8K
D19
UNSW 5V
IC2
12.3 3 REG 5V 1 5.5
2 0
C1 33/16
C2 33/6.3
D1
D2
C3 3300/6.3
C8 0.01
R39 33K
R38 1K
IC3
4.8 1 RESET 3 4.8
2 0
C10 10/16
C9 0.01
D19 RD9.1ES-T1B2
C14 33/6.3
UNSW 5V
UNSW 5V
-28V
Q1 2SC3311A (RS)
Q2 2SK656
IC2 M5278L56
IC3 IC-PST523H-2
IC1 UPD75212ACW-014
CN5
CN101
1 CLK 1
2 I/O 2
3 CE 3
4 PCLR 4
5 UNSW 5V 5
6 GND 6
7 -28V 7
R101 100K
R102 100K
R103 100K
0 16 CLK
4.8 15 I/O
14 NC
13 NC
12 NC
0 11 PCLR
10 NC
-27.8 9 VMM
CE 1 0
Vss 2 0
I/O 3 4.8
NC 4
NC 5
NC 6
NC 7
VDD 8 4.9
IC101 MN1220
35 MEMORY
5
4
3
2
1
A
B
C
D
E
F
G
H

3.29 TIMER AND MEMORY CIRCUIT BOARDS

—TIMER—


CN6
J3
J1
J2
2 0 PB10137A1-02
TIMER PWB ASS'Y
PB10137-01-02
TIMER PWB
▲CMK-77X
CN7
CN2
Q2
IC1
R9
R11
R12
D20
X2
C11
C12
R5
CN4
D16
R4
R6
R7
C15
RA2
R26
R25
R22
R20
R16
R17
R18
R19
RA3
CN3
CN5
R15
R14
TP1
R36
R37
R35
R31
R32
R34
C14
C16
D2
CN1
D12
D13
D14
D15
D10
D11
D17
R38
R39
IC3
C9
C10
R27
R28
R29
R30
C3
D3
R3
C7
Q1
R2
R1
C8
D19
IC2
C1
C2
D1

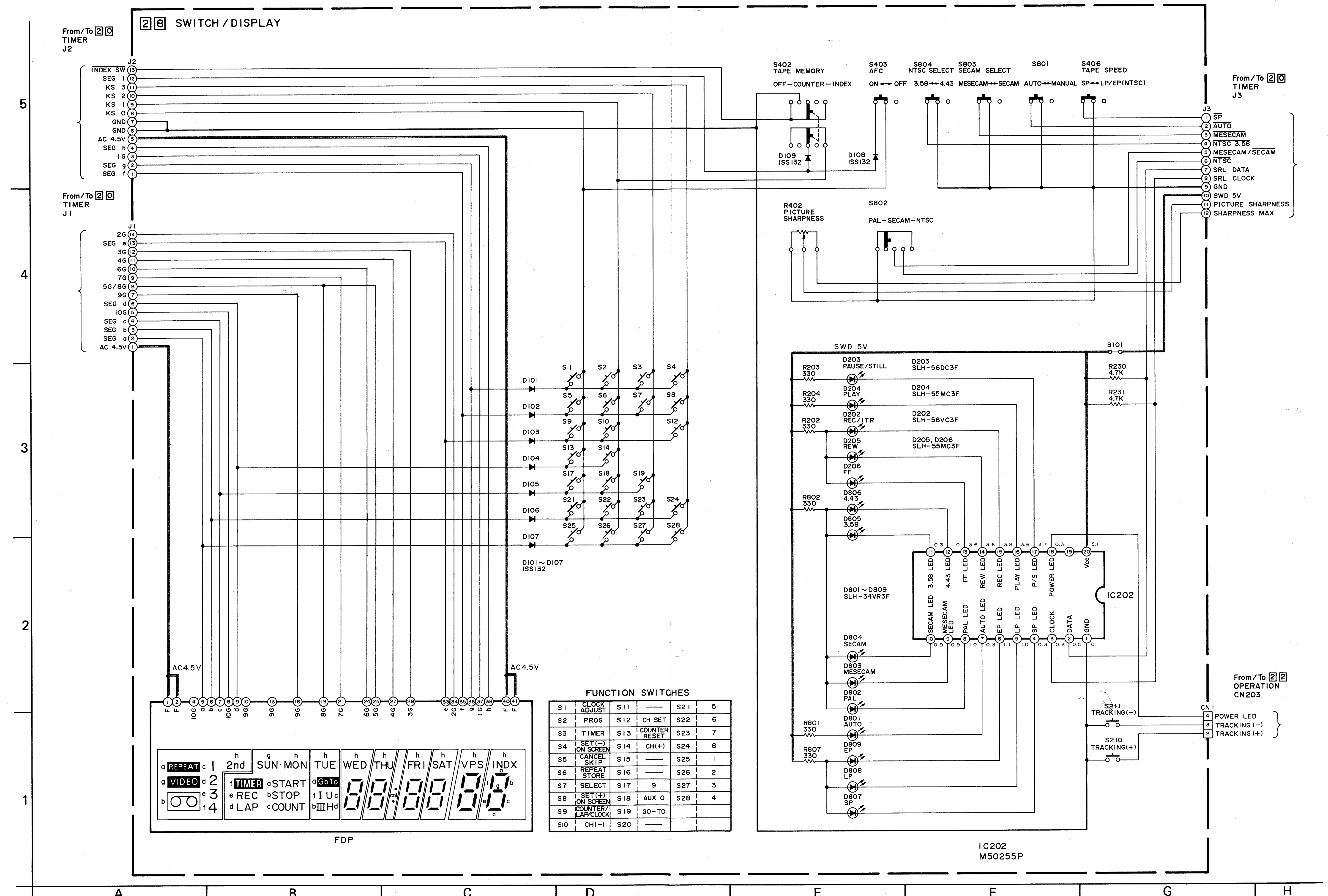
—MEMORY—


CN101
R103
R102
R104
R101
3 5 PB20208
A2
MEM PWB ASS'Y
IC101

5
4
3
2
1

A B C D E F G H

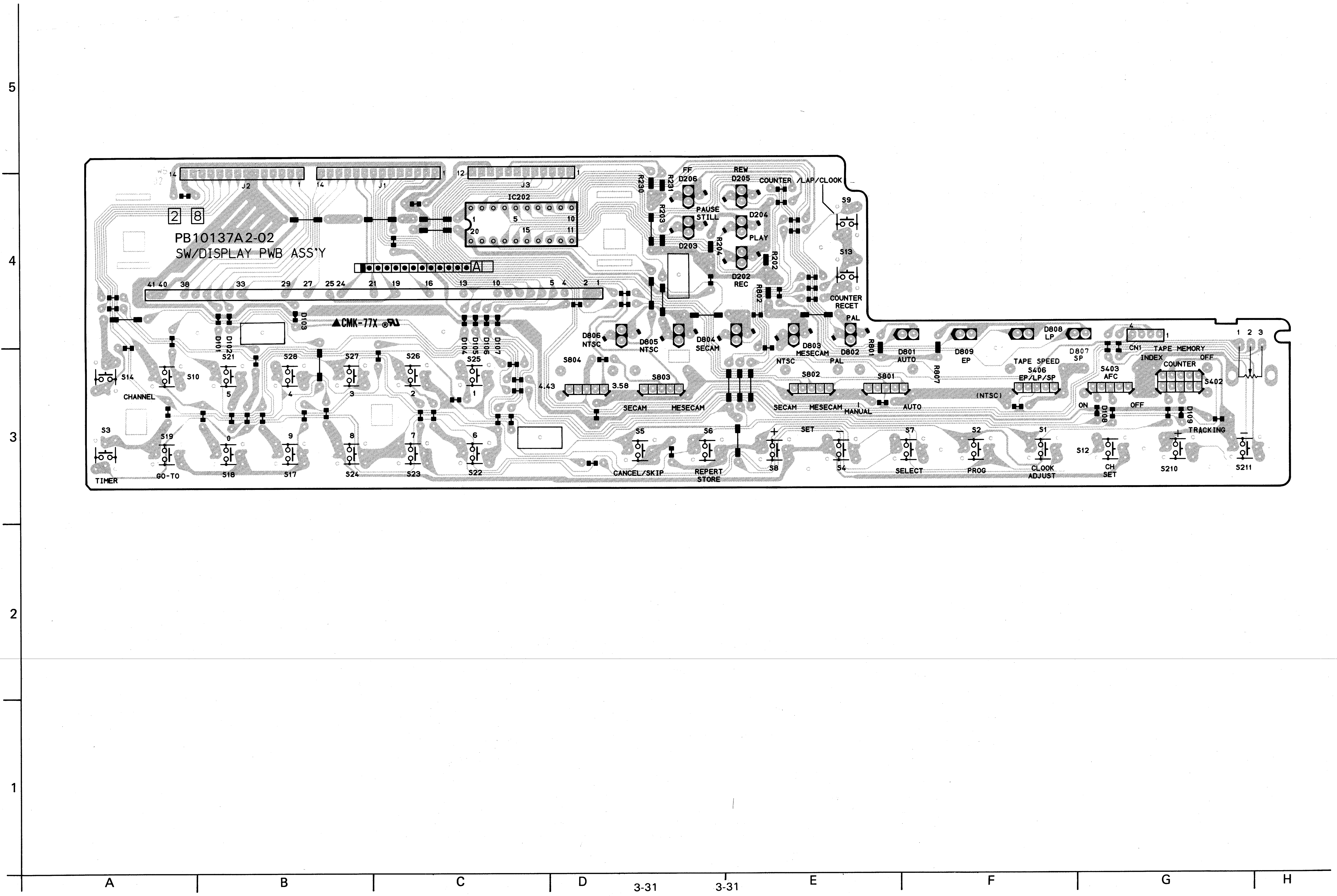
3.30 SWITCH/DISPLAY SCHEMATIC DIAGRAM


28 SWITCH / DISPLAY
From/To 20 TIMER J2
J2
INDEX SW 13
SEG i 12
KS 3 11
KS 2 10
KS 1 9
KS 0 8
GND 7
GND 6
AC 4.5V 5
SEG h 4
1G 3
SEG g 2
SEG f 1
From/To 20 TIMER J1
J1
2G 14
SEG e 13
3G 12
4G 11
6G 10
7G 9
5G/8G 8
9G 7
SEG d 6
10G 5
SEG c 4
SEG b 3
SEG a 2
AC 4.5V 1
S402 TAPE MEMORY
OFF—COUNTER—INDEX
S403 AFC
ON ↔ OFF
S804 NTSC SELECT
3.58 ↔ 4.43
S803 SECAM SELECT
MESECAM ↔ SECAM
S801
AUTO ↔ MANUAL
S406 TAPE SPEED
SP ↔ LP/EP(NTSC)
D109 ISS132
D108 ISS132
From/To 20 TIMER J3
J3
1 SP
2 AUTO
3 MESECAM
4 NTSC 3.58
5 MESECAM/SECAM
6 NTSC
7 SRL DATA
8 SRL CLOCK
9 GND
10 SWD 5V
11 PICTURE SHARPNESS
12 SHARPNESS MAX
R402 PICTURE SHARPNESS
S802
PAL—SECAM—NTSC
D101
D102
D103
D104
D105
D106
D107
S1 S2 S3 S4
S5 S6 S7 S8
S9 S10 S12
S13 S14
S17 S18 S19
S21 S22 S23 S24
S25 S26 S27 S28
D101 ~ D107 ISS132
SWD 5V
B101
R203 330
D203 PAUSE/STILL
D203 SLH-56DC3F
R204 330
D204 PLAY
D204 SLH-55MC3F
R202 330
D202 REC/ITR
D202 SLH-56VC3F
D205 REW
D205, D206 SLH-55MC3F
D206 FF
R802 330
D806 4.43
D805 3.58
R230 4.7K
R231 4.7K
D801 ~ D809 SLH-34VR3F
3.58 LED
4.43 LED
FF LED
REW LED
REC LED
PLAY LED
P/S LED
POWER LED
Vcc
SECAM LED
MESECAM LED
PAL LED
AUTO LED
EP LED
LP LED
SP LED
CLOCK
DATA
GND
0.3 1.0 3.6 3.6 3.8 3.6 3.7 0.3 5.1
0.9 0.9 1.0 0.3 1.1 1.0 0.3 0.3 0.5 0
IC202
D804 SECAM
D803 MESECAM
D802 PAL
D801 AUTO
R801 330
D809 EP
R807 330
D808 LP
D807 SP
S211 TRACKING(−)
S210 TRACKING(+)
From/To 22 OPERATION CN203
CN1
4 POWER LED
3 TRACKING (−)
2 TRACKING (+)
AC4.5V
AC4.5V
F F 10G a b c 10G d 9G 9G 9G 8G 7G 6G 5G 4G 3G e 2G f 1G h F F
REPEAT
VIDEO
2nd
SUN·MON
TUE
WED
THU
FRI
SAT
VPS
INDX
1 2 3 4
TIMER
START
STOP
COUNT
REC
LAP
GoTo
FDP
IC202 M50255P
A B C D E F G H
1 2 3 4 5

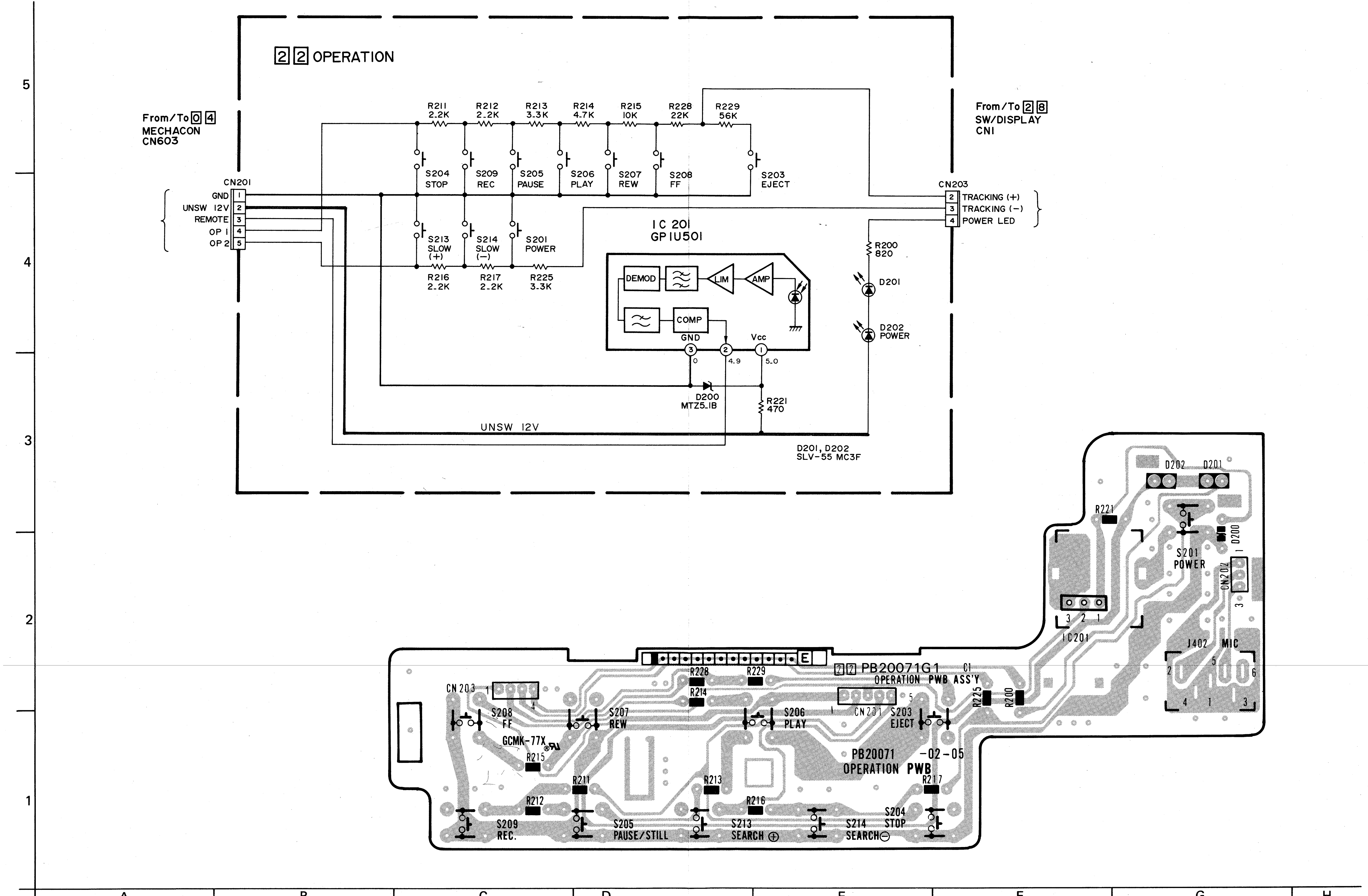
FUNCTION SWITCHES

S1	CLOCK ADJUST	S11	——	S21	5
S2	PROG	S12	CH SET	S22	6
S3	TIMER	S13	COUNTER RESET	S23	7
S4	SET(−) ON SCREEN	S14	CH(+)	S24	8
S5	CANCEL SKIP	S15	——	S25	1
S6	REPEAT STORE	S16	——	S26	2
S7	SELECT	S17	9	S27	3
S8	SET(+) ON SCREEN	S18	AUX 0	S28	4
S9	COUNTER/ LAP/CLOCK	S19	GO-TO		
S10	CH(−)	S20	——		

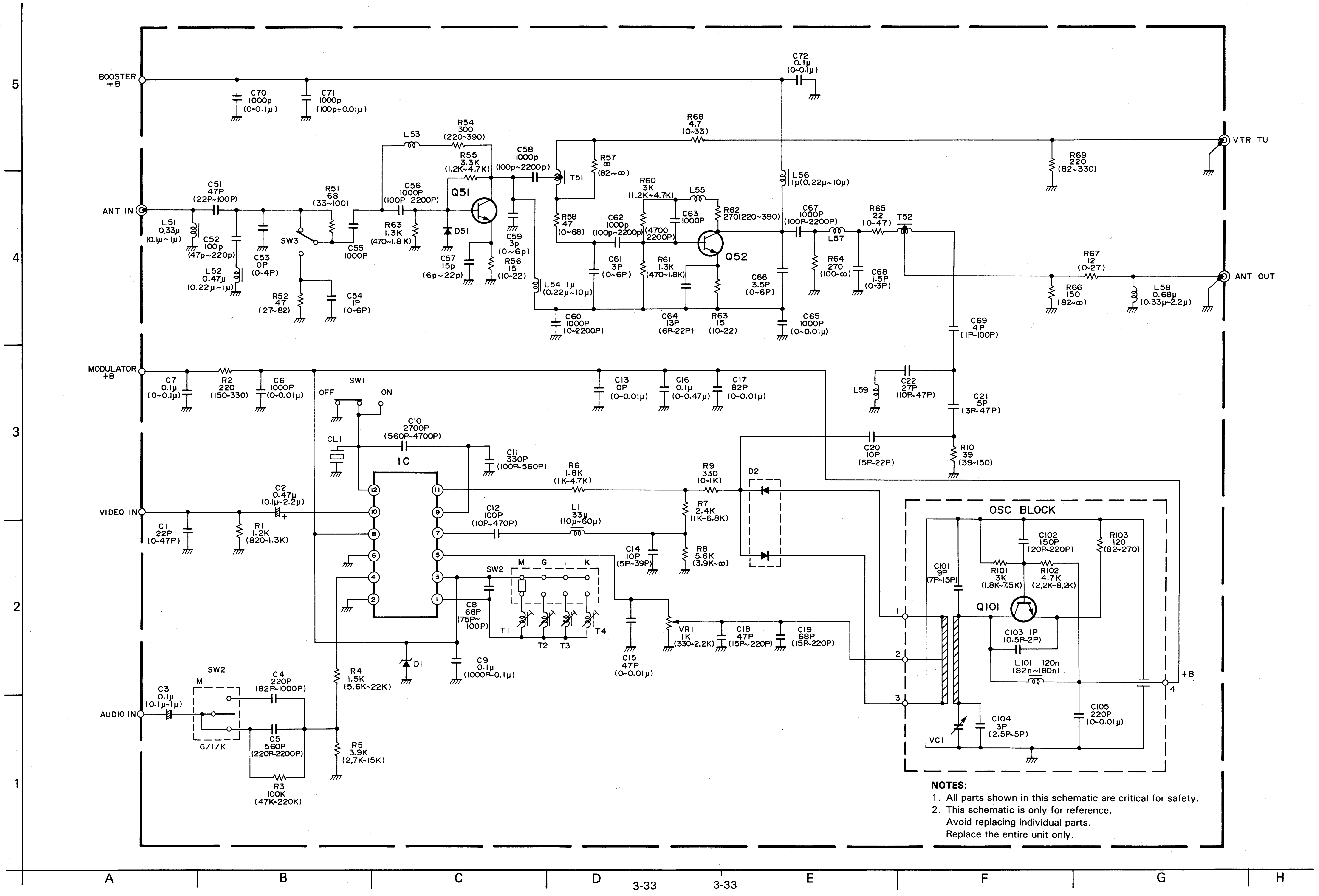
3.31 SWITCH/DISPLAY CIRCUIT BOARD


PB10137A2-02
SW/DISPLAY PWB ASS'Y
J2
J1
J3
IC202
AI
2 8
CMK-77X
FF
D206
REW
D205
PAUSE
STILL
D204
PLAY
D203
D202
REC
R230
R231
R203
R204
R202
R802
R801
R807
COUNTER /LAP/CLOOK
S9
S13
COUNTER
RECET
PAL
D806
NTSC
D805
NTSC
D804
SECAM
D803
MESECAM
D802
PAL
D801
AUTO
D809
EP
D808
LP
D807
SP
CN1
TAPE MEMORY
INDEX
COUNTER
OFF
S402
TAPE SPEED
S406
EP/LP/SP
S403
AFC
ON
OFF
D108
D109
TRACKING
(NTSC)
S804
4.43
3.58
S803
SECAM
MESECAM
S802
SECAM
MESECAM
S801
MANUAL
AUTO
D101
D102
D103
D104
D105
D106
D107
S14
CHANNEL
S10
S21
5
S28
4
S27
3
S26
2
S25
1
S3
TIMER
S19
GO-TO
S18
0
S17
9
S24
8
S23
7
S22
6
S5
CANCEL/SKIP
S6
REPERT
STORE
S8
+
SET
S4
−
S7
SELECT
S2
PROG
S1
CLOOK
ADJUST
S12
CH
SET
S210
+
S211
−
1 2 3
A
B
C
D
E
F
G
H
1
2
3
4
5

3.32 OPERATION SCHEMATIC DIAGRAM AND CIRCUIT BOARD

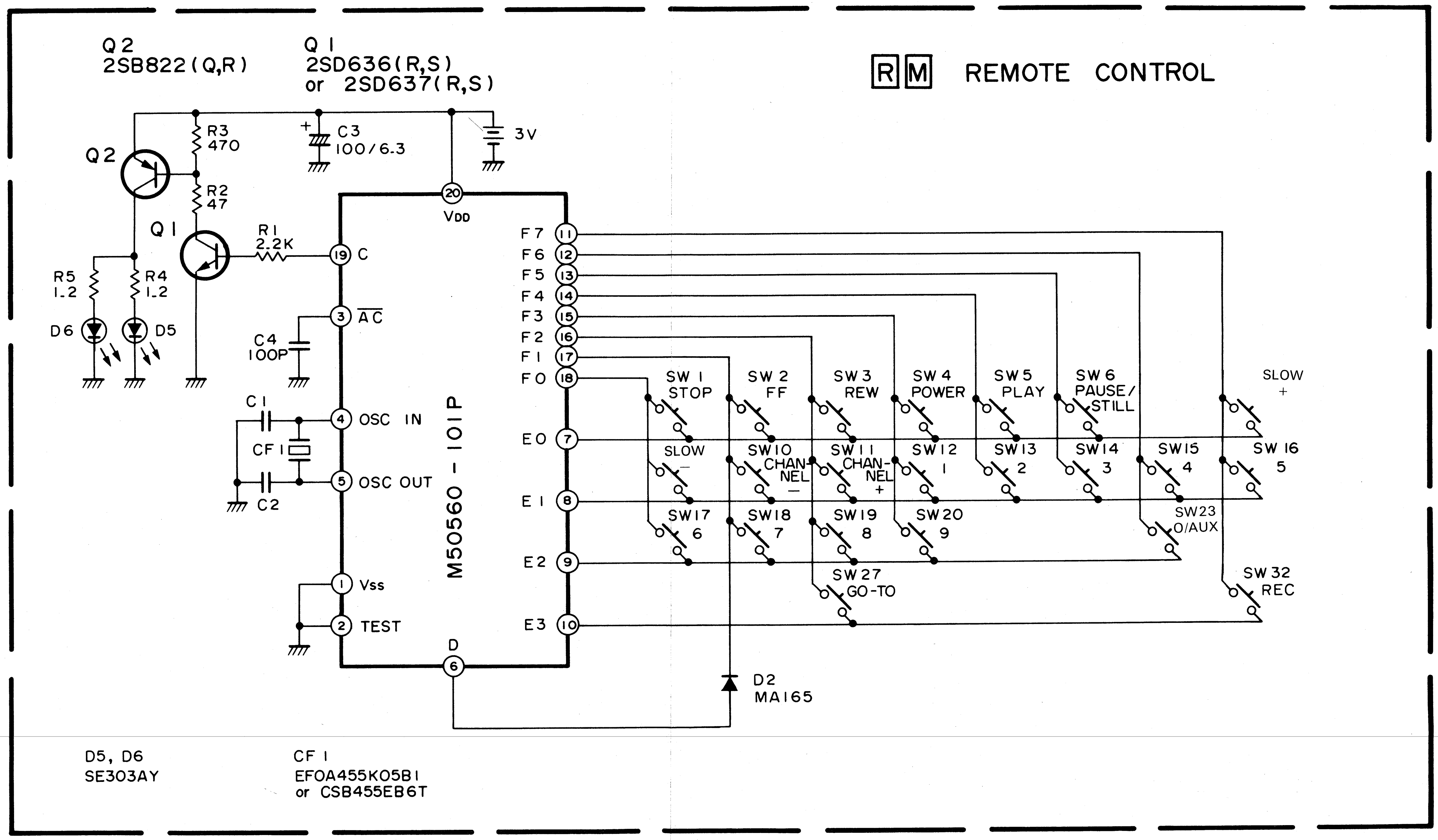

2 2 OPERATION
From/To 0 4
MECHACON
CN603
CN201
GND 1
UNSW 12V 2
REMOTE 3
OP 1 4
OP 2 5
R211 2.2K
R212 2.2K
R213 3.3K
R214 4.7K
R215 10K
R228 22K
R229 56K
S204 STOP
S209 REC
S205 PAUSE
S206 PLAY
S207 REW
S208 FF
S203 EJECT
S213 SLOW (+)
S214 SLOW (−)
S201 POWER
R216 2.2K
R217 2.2K
R225 3.3K
IC 201
GP1U501
DEMOD
LIM
AMP
COMP
GND
Vcc
3
2
1
0
4.9
5.0
D200
MTZ5.1B
R221
470
UNSW 12V
From/To 2 8
SW/DISPLAY
CN1
CN203
2 TRACKING (+)
3 TRACKING (−)
4 POWER LED
R200
820
D201
D202
POWER
D201, D202
SLV-55 MC3F
D202
D201
R221
D200
S201
POWER
CN202
IC201
J402
MIC
2 2 PB20071G1
OPERATION PWB ASS'Y
R228
R229
R214
CN 203
S208
FF
S207
REW
S206
PLAY
CN201
S203
EJECT
R225
R200
GCMK-77X
R215
PB20071 -02-05
OPERATION PWB
R211
R212
R213
R216
R217
S209
REC.
S205
PAUSE/STILL
S213
SEARCH ⊕
S214
SEARCH ⊖
S204
STOP
5
4
3
2
1
A
B
C
D
E
F
G
H

3.33 RF CONVERTOR AND MIX BOOSTER SCHEMATIC DIAGRAM


BOOSTER +B
ANT IN
MODULATOR +B
VIDEO IN
AUDIO IN
VTR TU
ANT OUT
C70 1000p (0~0.1μ)
C71 1000p (100p~0.01μ)
C72 0.1μ (0~0.1μ)
R68 4.7 (0~33)
R54 300 (220~390)
L53
R55 3.3K (1.2K~4.7K)
C58 1000p (100p~2200p)
R57 ∞ (82~∞)
T51
C51 47P (22P~100P)
L51 0.33μ (0.1μ~1μ)
C52 100p (47p~220p)
L52 0.47μ (0.22μ~1μ)
C53 0P (0~4P)
SW3
R51 68 (33~100)
C55 1000P
C56 1000P (100P 2200P)
R63 1.3K (470~1.8K)
Q51
D51
C57 15p (6p~22p)
C59 3p (0~6p)
R56 15 (10~22)
L54 1μ (0.22μ~10μ)
R52 47 (27~82)
C54 1P (0~6P)
R58 47 (0~68)
C62 1000p (100p~2200p)
R60 3K (1.2K~4.7K)
L55
C63 1000P (4700 2200P)
R62 270(220~390)
Q52
C61 3P (0~6P)
R61 1.3K (470~1.8K)
C60 1000P (0~2200P)
C64 13P (6P~22P)
R63 15 (10~22)
L56 1μ(0.22μ~10μ)
C66 3.5P (0~6P)
C65 1000P (0~0.01μ)
C67 1000P (100P~2200P)
L57
R65 22 (0~47)
T52
R64 270 (100~∞)
C68 1.5P (0~3P)
R69 220 (82~330)
R67 12 (0~27)
R66 150 (82~∞)
L58 0.68μ (0.33μ~2.2μ)
C69 4P (1P~100P)
C7 0.1μ (0~0.1μ)
R2 220 (150~330)
C6 1000P (0~0.01μ)
SW1
OFF
ON
C13 0P (0~0.01μ)
C16 0.1μ (0~0.47μ)
C17 82P (0~0.01μ)
L59
C22 27P (10P~47P)
C21 5P (3P~47P)
CL1
C10 2700P (560P~4700P)
C11 330P (100P~560P)
IC
C20 10P (5P~22P)
R10 39 (39~150)
R6 1.8K (1K~4.7K)
R9 330 (0~1K)
D2
C2 0.47μ (0.1μ~2.2μ)
C1 22P (0~47P)
R1 1.2K (820~1.3K)
C12 100P (10P~470P)
L1 33μ (10μ~60μ)
R7 2.4K (1K~6.8K)
R8 5.6K (3.9K~∞)
C14 10P (5P~39P)
OSC BLOCK
C102 150P (20P~220P)
R103 120 (82~270)
C101 9P (7P~15P)
R101 3K (1.8K~7.5K)
R102 4.7K (2.2K~8.2K)
Q101
SW2
M G I K
C8 68P (75P~100P)
T1 T2 T3 T4
C15 47P (0~0.01μ)
VR1 1K (330~2.2K)
C18 47P (15P~220P)
C19 68P (15P~220P)
C103 1P (0.5P~2P)
L101 120n (82n~180n)
+B
D1
C9 0.1μ (1000P~0.1μ)
C3 0.1μ (0.1μ~1μ)
C4 220P (82P~1000P)
C5 560P (220P~2200P)
G/I/K
R3 100K (47K~220K)
R4 1.5K (5.6K~22K)
R5 3.9K (2.7K~15K)
C104 3P (2.5P~5P)
C105 220P (0~0.01μ)
VC1
1 2 3 4
5 4 3 2 1
A B C D E F G H

NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.

3.34 REMOTE CONTROL SCHEMATIC DIAGRAM


RM REMOTE CONTROL
Q2
2SB822(Q,R)
Q1
2SD636(R,S)
or 2SD637(R,S)
R3
470
C3
100/6.3
3V
Q2
R2
47
Q1
R1
2.2K
19 C
20
VDD
R5
1.2
R4
1.2
D6
D5
3 AC
C4
100P
C1
4 OSC IN
CF1
5 OSC OUT
C2
1 Vss
2 TEST
D
6
M50560 - 101P
F7 11
F6 12
F5 13
F4 14
F3 15
F2 16
F1 17
F0 18
E0 7
E1 8
E2 9
E3 10
SW1
STOP
SW2
FF
SW3
REW
SW4
POWER
SW5
PLAY
SW6
PAUSE/
STILL
SLOW
+
SLOW
−
SW10
CHAN-
NEL
−
SW11
CHAN-
NEL
+
SW12
1
SW13
2
SW14
3
SW15
4
SW16
5
SW17
6
SW18
7
SW19
8
SW20
9
SW23
O/AUX
SW27
GO-TO
SW32
REC
D2
MA165
D5, D6
SE303AY
CF1
EFOA455K05B1
or CSB455EB6T
A
B
C
D
E
F
G
H
1
2
3
4
5

NOTES:

1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.

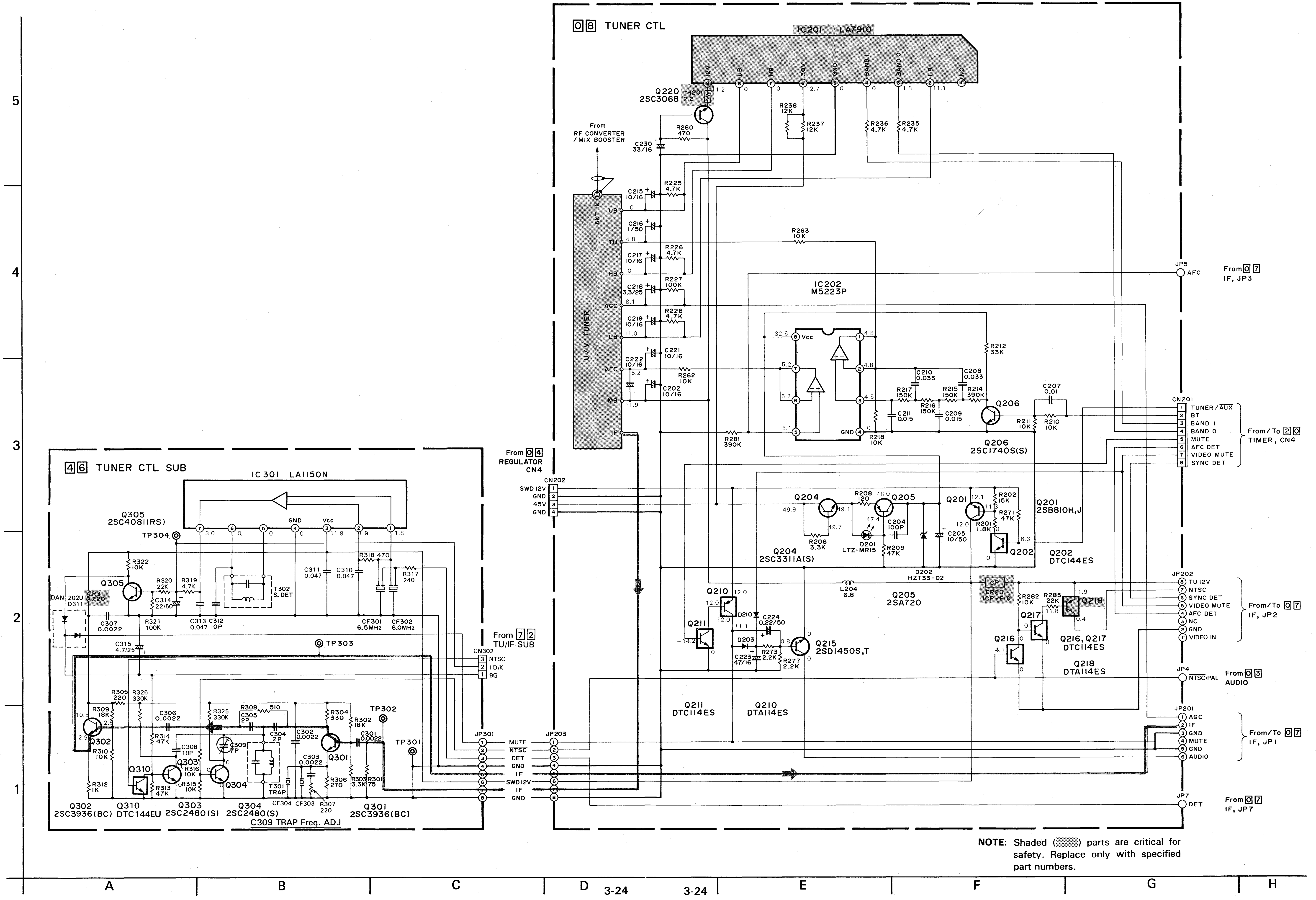
HR-D337MS

REVISED TUNER CONTROL AND IF

This is an addition to the No. 82051 Service Manual for the HR-D337MS model.
Insert this to the original and use for units produced on June 1989 and later.

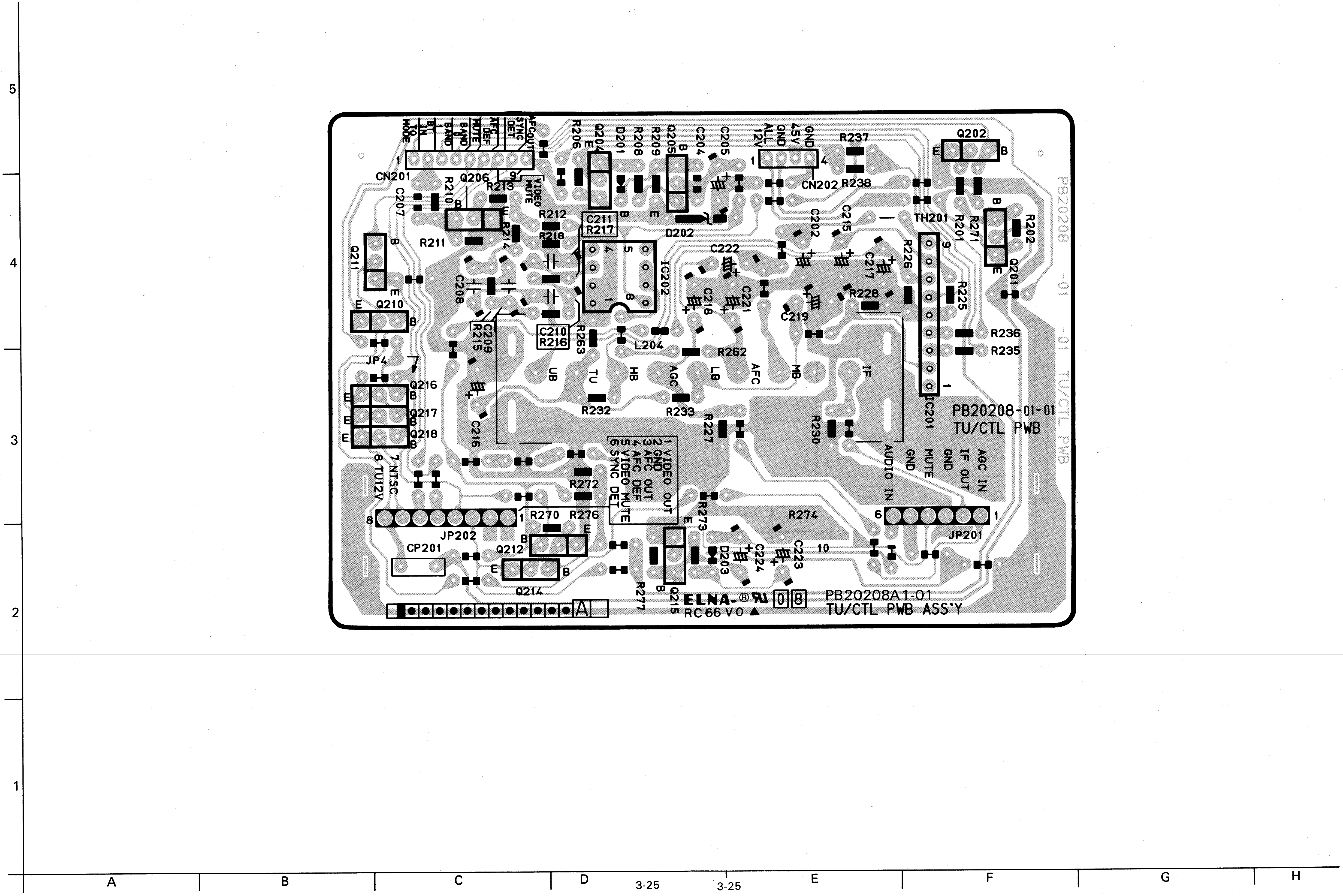
No. 82051B
April 1990

3.24 TUNER CONTROL/TUNER SUB SCHEMATIC DIAGRAM

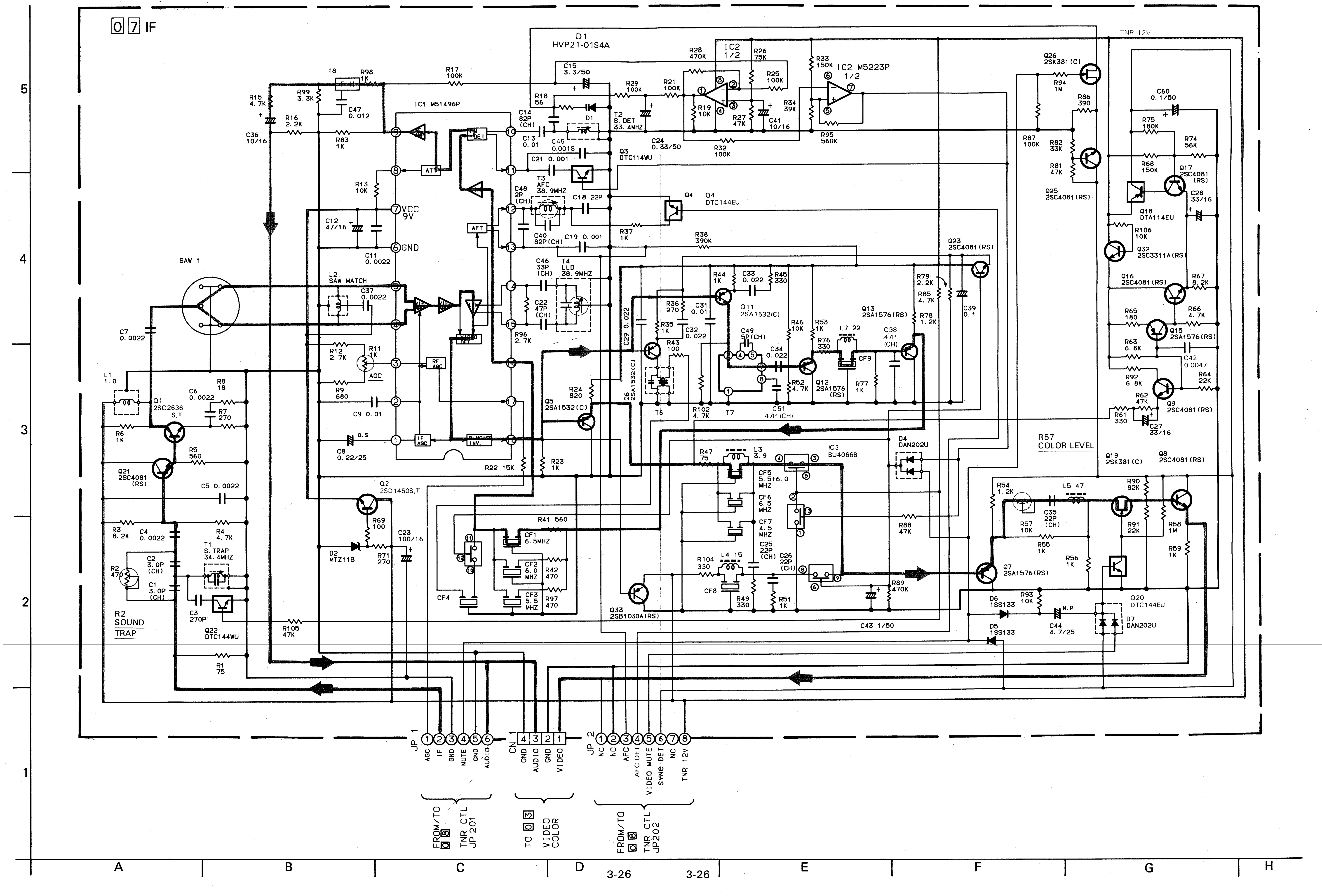

08 TUNER CTL
IC201 LA7910
12V
UB
HB
30V
GND
BAND I
BAND O
LB
NC
Q220
2SC3068
TH201
2.2
R280
470
From
RF CONVERTER
/MIX BOOSTER
C230
33/16
R238
12K
R237
12K
R236
4.7K
R235
4.7K
ANT IN
U/V TUNER
UB
TU
HB
AGC
LB
AFC
MB
IF
C215
10/16
R225
4.7K
C216
1/50
C217
10/16
R226
4.7K
C218
3.3/25
R227
100K
C219
10/16
R228
4.7K
C221
10/16
C222
10/16
R262
10K
C202
10/16
R263
10K
IC202
M5223P
Vcc
GND
R212
33K
C210
0.033
C208
0.033
R217
150K
R215
150K
R214
390K
R216
150K
C211
0.015
C209
0.015
R281
390K
R218
10K
Q206
2SC1740S(S)
C207
0.01
R211
10K
R210
10K
JP5
AFC
From 07
IF, JP3
CN201
TUNER/AUX
BT
BAND I
BAND O
MUTE
AFC DET
VIDEO MUTE
SYNC DET
From/To 20
TIMER, CN4
From 04
REGULATOR
CN4
CN202
SWD 12V
GND
45V
GND
Q204
2SC3311A(S)
R208
120
Q205
2SA720
Q201
2SB810H,J
R202
15K
R271
47K
R201
1.8K
R206
3.3K
D201
LTZ-MR15
C204
100P
R209
47K
C205
10/50
Q202
DTC144ES
D202
HZT33-02
L204
6.8
CP
CP201
ICP-F10
R282
10K
R285
22K
Q218
DTA114ES
Q217
Q216
Q216, Q217
DTC114ES
JP202
TU 12V
NTSC
SYNC DET
VIDEO MUTE
AFC DET
NC
GND
VIDEO IN
From/To 07
IF, JP2
Q210
DTA114ES
Q211
DTC114ES
D210
C224
0.22/50
D203
C223
47/16
R273
2.2K
R277
2.2K
Q215
2SD1450S,T
JP4
NTSC/PAL
From 03
AUDIO
JP201
AGC
IF
GND
MUTE
GND
AUDIO
From/To 07
IF, JP1
JP7
DET
From 07
IF, JP7
JP203
46 TUNER CTL SUB
IC301 LA1150N
GND
Vcc
Q305
2SC4081(RS)
TP304
R322
10K
R320
22K
R319
4.7K
C314
22/50
T302
S.DET
R318 470
R317
240
C311
0.047
C310
0.047
DAN 202U
D311
R311
220
C307
0.0022
R321
100K
C313
0.047
C312
10P
CF301
6.5MHz
CF302
6.0MHz
C315
4.7/25
TP303
From 72
TU/IF SUB
CN302
NTSC
I D/K
BG
R305
220
R326
330K
R309
18K
C306
0.0022
R325
330K
R308
510
C305
2P
C304
2P
C302
0.0022
R304
330
R302
18K
C301
0.0022
TP302
TP301
R314
47K
C308
10P
C309
7P
C303
0.0022
R316
10K
R315
10K
R310
10K
R312
1K
R313
47K
T301
TRAP
CF304
CF303
R307
220
R306
270
R303
3.3K
R301
75
JP301
MUTE
NTSC
DET
GND
IF
SWD 12V
IF
GND
Q302
2SC3936(BC)
Q310
DTC144EU
Q303
2SC2480(S)
Q304
2SC2480(S)
Q301
2SC3936(BC)
C309 TRAP Freq. ADJ
A
B
C
D
E
F
G
H
1
2
3
4
5

NOTE: Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

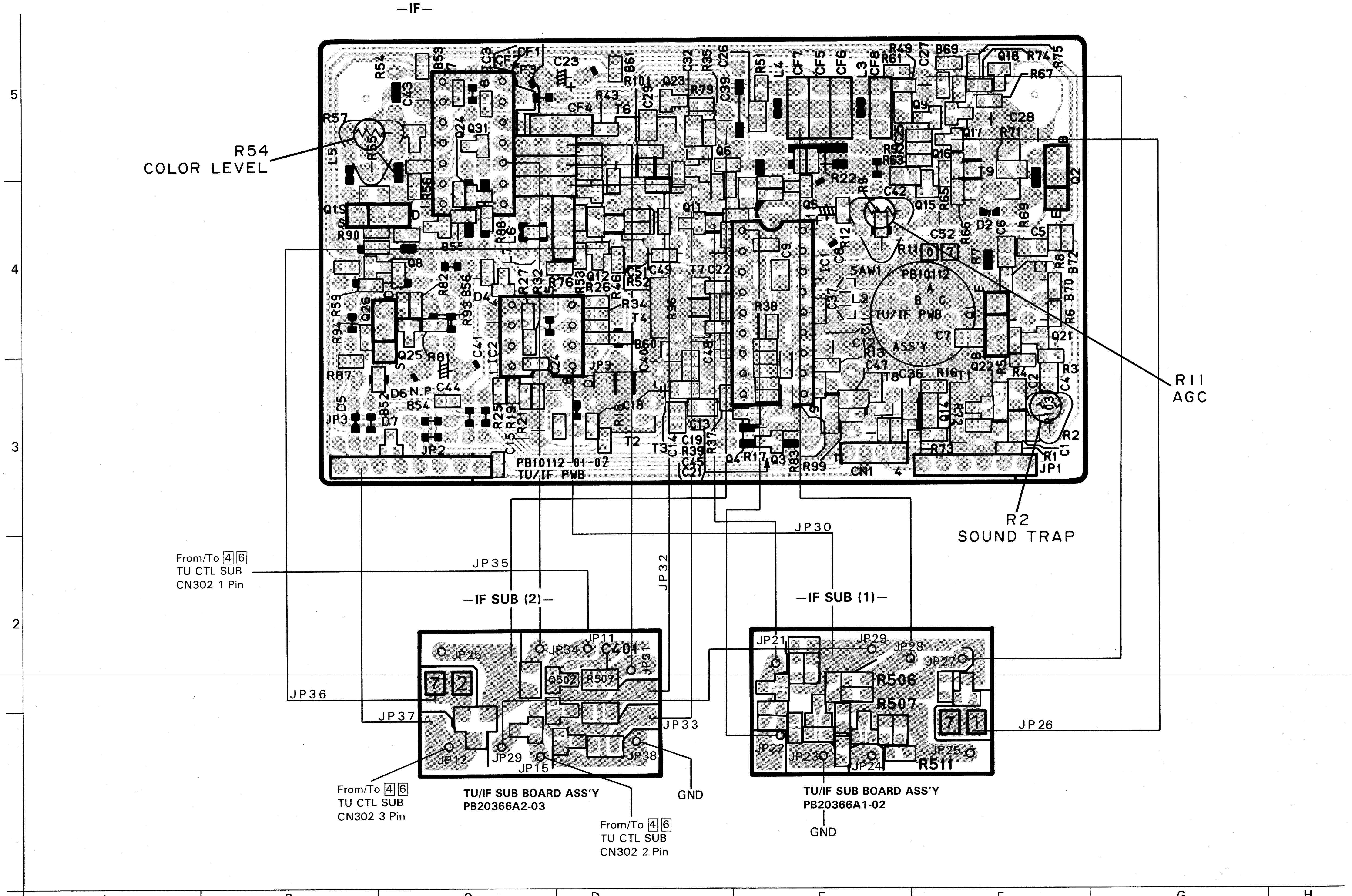
3.25 TUNER CONTROL CIRCUIT BOARD


5
4
3
2
1
A
B
C
D
E
F
G
H
CN201
1
9
MODE
TO
IN
BT
BAND
0
BAND
MUTE
DEF
AFC
DET
SYNC
AFC OUT
VIDEO MUTE
R206
Q204
D201
R208
R209
Q205
C204
C205
12V
ALL
GND
45V
GND
CN202
R237
R238
Q202
E
B
C207
R210
Q206
R213
R212
R218
R211
R214
C211
R217
D202
C202
C215
TH201
R201
R271
R202
Q201
Q211
C208
IC202
C222
C218
C221
C219
C217
R228
R226
R225
Q210
C209
R215
C210
R216
R263
L204
R262
R236
R235
JP4
UB
TU
HB
AGC
LB
AFC
MB
IF
Q216
Q217
Q218
C216
R232
R233
R227
R230
IC201
PB20208-01-01
TU/CTL PWB
1 VIDEO OUT
2 GND
3 AFC OUT
4 AFC DEF
5 VIDEO MUTE
6 SYNC DET
AUDIO IN
GND
MUTE
GND
IF OUT
AGC IN
7 NTSC
8 TU12V
R272
R270
R276
R273
R274
JP202
JP201
CP201
Q212
Q214
Q215
D203
C224
C223
10
R277
ELNA-®
RC66V0
08
PB20208A1-01
TU/CTL PWB ASS'Y
PB20208 -01 -01 TU/CTL PWB

3.26 IF SCHEMATIC DIAGRAM


07 IF
D1 HVP21-01S4A
IC2 1/2
IC2 M5223P 1/2
IC1 M51496P
TNR 12V
T8
R98 1K
R17 100K
R15 4.7K
R99 3.3K
C47 0.012
R16 2.2K
C36 10/16
R83 1K
R13 10K
C12 47/16
C11 0.0022
VCC 9V
GND
ATT
FM DET
AFT
C15 3.3/50
R18 56
C14 82P (CH)
C13 0.01
C45 0.0018
C21 0.001
T2 S.DET 33.4MHZ
Q3 DTC114WU
R29 100K
R21 100K
C24 0.33/50
R28 470K
R26 75K
R25 100K
R19 10K
R27 47K
R34 39K
C41 10/16
R32 100K
R33 150K
R95 560K
C48 2P (CH)
T3 AFC 38.9MHZ
C18 22P
C40 82P (CH)
C19 0.001
R37 1K
Q4 DTC144EU
R38 390K
C46 33P (CH)
T4 LLD 38.9MHZ
C22 47P (CH)
R96 2.7K
SAW 1
L2 SAW MATCH
C37 0.0022
C7 0.0022
L1 1.0
R12 2.7K
R11 1K
AGC
RF AGC
R9 680
C9 0.01
C8 0.22/25
0.S
IF AGC
VIDEO DET
B NOISE INV.
R22 15K
R23 1K
R24 820
Q5 2SA1532(C)
Q6 2SA1532(C)
C29 0.022
R8 18
C6 0.0022
R7 270
Q1 2SC2636 S,T
R6 1K
R5 560
Q21 2SC4081 (RS)
C5 0.0022
R3 8.2K
C4 0.0022
R4 4.7K
R2 470
C2 3.0P (CH)
C1 3.0P (CH)
T1 S.TRAP 34.4MHZ
C3 270P
Q22 DTC144WU
R2 SOUND TRAP
R105 47K
R1 75
Q2 2SD1450S,T
R69 100
D2 MTZ11B
R71 270
C23 100/16
R41 560
CF1 6.5MHZ
CF2 6.0 MHZ
CF3 5.5 MHZ
CF4
R42 470
R97 470
R36 270
R35 1K
R43 100
T6
C31 0.01
C32 0.022
R44 1K
C33 0.022
R45 330
Q11 2SA1532(C)
C49 5P (CH)
C34 0.022
T7
R102 4.7K
C51 47P (CH)
R46 10K
R52 4.7K
R53 1K
R76 330
L7 22
CF9
Q12 2SA1576 (RS)
R77 1K
C38 47P (CH)
Q13 2SA1576 (RS)
R79 2.2K
R85 4.7K
R78 1.2K
C39 0.1
Q23 2SC4081 (RS)
R47 75
L3 3.9
IC3 BU4066B
CF5 5.5+6.0 MHZ
CF6 6.5 MHZ
CF7 4.5 MHZ
C25 22P (CH)
C26 22P (CH)
R104 330
L4 15
CF8
R49 330
R51 1K
Q33 2SB1030A(RS)
C43 1/50
R89 470K
R88 47K
D4 DAN202U
Q26 2SK381(C)
R94 1M
R86 390
R87 100K
R82 33K
R81 47K
Q25 2SC4081 (RS)
C60 0.1/50
R75 180K
R74 56K
R68 150K
Q17 2SC4081 (RS)
C28 33/16
Q18 DTA114EU
R106 10K
Q32 2SC3311A(RS)
Q16 2SC4081 (RS)
R67 8.2K
R65 180
R66 4.7K
Q15 2SA1576(RS)
R63 6.8K
C42 0.0047
R92 6.8K
R64 22K
R62 47K
Q9 2SC4081 (RS)
R61 330
C27 33/16
R57 COLOR LEVEL
Q19 2SK381(C)
Q8 2SC4081 (RS)
R54 1.2K
L5 47
C35 22P (CH)
R57 10K
R55 1K
R90 82K
R91 22K
R58 1M
R59 1K
R56 1K
Q7 2SA1576(RS)
Q20 DTC144EU
D6 1SS133
R93 10K
C44 4.7/25
N.P
D5 1SS133
D7 DAN202U
JP 1
AGC
IF
GND
MUTE
GND
AUDIO
CN 1
GND
AUDIO
GND
VIDEO
JP 2
NC
NC
AFC
AFC DET
VIDEO MUTE
SYNC DET
NC
TNR 12V
FROM/TO 08 TNR CTL JP201
TO 03 VIDEO COLOR
FROM/TO 08 TNR CTL JP202
1
2
3
4
5
A
B
C
D
E
F
G
H

3.27 IF CIRCUIT BOARD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R54
COLOR LEVEL
R11
AGC
R2
SOUND TRAP
PB10112-01-02
TU/IF PWB
PB10112
A
B C
TU/IF PWB
ASS'Y
SAW1
IC1
IC2
IC3
CN1
JP1
JP2
JP3
JP30
JP35
JP32
JP36
JP37
JP33
JP26
From/To 4 6
TU CTL SUB
CN302 1 Pin
—IF SUB (2)—
JP25
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C401
JP31
Q502
R507
JP12
JP29
JP15
JP38
7 2
From/To 4 6
TU CTL SUB
CN302 3 Pin
TU/IF SUB BOARD ASS'Y
PB20366A2-03
From/To 4 6
TU CTL SUB
CN302 2 Pin
GND
—IF SUB (1)—
JP21
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JP28
JP27
R506
R507
7 1
JP22
JP23
JP24
JP25
R511
TU/IF SUB BOARD ASS'Y
PB20366A1-02
GND
5
4
3
2
A
B
C
D
E
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G
H

SECTION 5
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

* * *

IF BOARD ASSEMBLY <07>

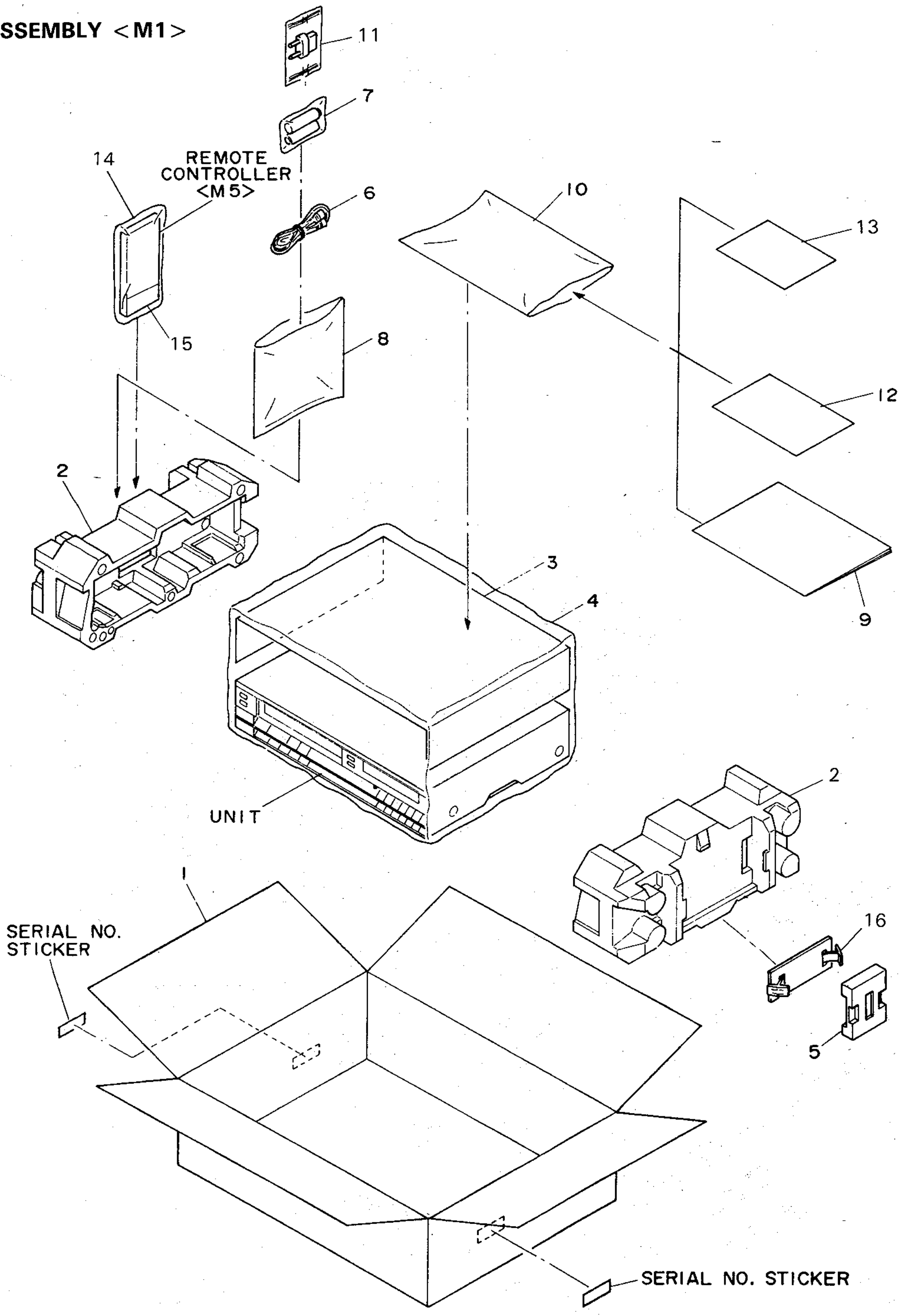
⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
	PWBA	PB10112A-10	IF BOARD ASSEMBLY
	IC1	M51496P	IC
	IC2	M5223P	IC
	IC3	BU4066B	IC
⚠	Q1	2SC2636S,T	TRANSISTOR
	Q2	2SD1450S,T	TRANSISTOR
	Q3	DTC144WU	TRANSISTOR
	Q4	DTC144EU	TRANSISTOR
	Q5	2SA1532(C)	TRANSISTOR
	Q6	2SA1532(C)	TRANSISTOR
	Q7	2SA1576(RS)	TRANSISTOR
	Q8	2SC4081(RS)	TRANSISTOR
	Q9	2SC4081(RS)	TRANSISTOR
	Q12	2SA1576(RS)	TRANSISTOR
	Q13	2SA1576(RS)	TRANSISTOR
	Q15	2SA1576(RS)	TRANSISTOR
	Q16	2SC4081(RS)	TRANSISTOR
	Q17	2SC4081(RS)	TRANSISTOR
	Q18	DTA114EU	TRANSISTOR
	Q19	2SK381(C)	FE TRANSISTOR
	Q20	DTC144EU	TRANSISTOR
	Q21	2SC4081(RS)	TRANSISTOR
	Q22	DTC144WU	TRANSISTOR
	Q25	2SC4081(RS)	TRANSISTOR
	Q26	2SK381(C)	FE TRANSISTOR
	D1	HVP21-01S4A	VARICAP DIODE
	D2	MTZ11B	ZENER DIODE
	or	RD11ES-T1B2	ZENER DIODE
	D4	DAN202U	DIODE
	D5	1SS133	DIODE
	D6	1SS133	DIODE
	D7	DAN202U	DIODE
	R2	QVZ3531-471	V RESISTOR, SOUND TRAP
	R3	NRSA63J-822N	RESISTOR
	R4	NRSA63J-472N	RESISTOR
	R5	NRSA63J-561N	RESISTOR
	R6	NRSA63J-102N	RESISTOR
⚠	R7	QRD161J-221	RESISTOR
	R8	NRSA63J-430N	RESISTOR
	R9	NRSA63J-681N	RESISTOR
	R11	QVZ3518-102	V RESISTOR, RF AGC
	R12	NRSA63J-272N	RESISTOR
	R13	NRSA63J-103N	RESISTOR
	R15	NRSA63J-472N	RESISTOR
	R16	NRSA63J-222N	RESISTOR
	R17	QRD181J-104	RESISTOR
	R18	NRSA63J-560N	RESISTOR
	R19	NRSA63J-103N	RESISTOR
	R21	NRSA63J-104N	RESISTOR
	R22	QRD181J-153	RESISTOR
	R23	NRSA63J-102N	RESISTOR
	R24	NRSA63J-821N	RESISTOR
	R25	NRSA63J-104N	RESISTOR
	R26	NRSA63J-753N	RESISTOR
	R27	NRSA63J-473N	RESISTOR
	R28	NRSA63J-474N	RESISTOR
	R29	NRSA63J-104N	RESISTOR
	R32	NRSA63J-104N	RESISTOR
	R33	NRSA63J-154N	RESISTOR
	R34	NRSA63J-393N	RESISTOR
	R35	NRSA63J-102N	RESISTOR
	R36	NRSA63J-181N	RESISTOR
	R37	NRSA63J-102N	RESISTOR
	R38	NRSA63J-394N	RESISTOR
	R41	NRSA63J-561N	RESISTOR
	R42	NRSA63J-471N	RESISTOR
	R43	NRSA63J-101N	RESISTOR
	R46	NRSA63J-103N	RESISTOR
	R47	NRSA63J-750N	RESISTOR
	R49	NRSA63J-331N	RESISTOR
	R51	NRSA63J-102N	RESISTOR
	R52	NRSA63J-472N	RESISTOR
	R53	NRSA63J-102N	RESISTOR
	R54	QRD161J-122	RESISTOR
	R55	QRD161J-102	RESISTOR
	R56	NRSA63J-102N	RESISTOR
	R57	QVZ3518-103	V RESISTOR, COLOUR LEVEL
	R58	NRSA63J-105N	RESISTOR
	R59	NRSA63J-102N	RESISTOR
	R62	NRSA63J-473N	RESISTOR
	R63	NRSA63J-682N	RESISTOR
	R64	NRSA63J-223N	RESISTOR
	R65	NRSA63J-181N	RESISTOR
	R66	NRSA63J-472N	RESISTOR
	R67	NRSA63J-822N	RESISTOR
	R68	NRSA63J-154N	RESISTOR
	R69	QRD161J-101	RESISTOR
⚠	R71	QRSA08J-271YN	RESISTOR
	R74	NRSA63J-563N	RESISTOR
	R75	NRSA63J-184N	RESISTOR
	R76	NRSA63J-331N	RESISTOR
	R78	NRSA63J-122N	RESISTOR
	R81	NRSA63J-473N	RESISTOR
	R82	NRSA63J-333N	RESISTOR
	R83	NRSA63J-102N	RESISTOR
	R85	NRSA63J-472N	RESISTOR
	R86	NRSA63J-391N	RESISTOR
	R87	NRSA63J-104N	RESISTOR
	R88	NRSA63J-473N	RESISTOR
	R89	NRSA63J-474N	RESISTOR
	R90	NRSA63J-823N	RESISTOR
	R91	NRSA63J-223N	RESISTOR
	R92	NRSA63J-682N	RESISTOR
	R93	QRD161J-103	RESISTOR
	R94	NRSA63J-105N	RESISTOR
	R95	NRSA63J-564N	RESISTOR
	R96	NRSA63J-272N	RESISTOR
	R97	NRSA63J-471N	RESISTOR
	R98	NRSA63J-102N	RESISTOR
	R99	NRSA63J-332N	RESISTOR
	R101	NRSA63J-222N	RESISTOR
	R102	NRSA63J-472N	RESISTOR
	R105	QRD181J-473	RESISTOR
	C1	QCTA1CH-3R0	CAPACITOR
	C2	QCTA1CH-3R0	CAPACITOR
	C3	NCB31HK-271A	CAPACITOR
	C4	QCYA1HK-222	CAPACITOR
	C5	QCYA1HK-222	CAPACITOR
	C6	QCYA1HK-222	CAPACITOR
	C7	QCYA1HK-222	CAPACITOR
	C8	PU57601-224MEZ	E CAPACITOR
	C9	QCYA1HK-103	CAPACITOR
	C11	NCB31HK-222A	CAPACITOR
	C12	QETG1CM-476	E CAPACITOR
	C13	QCYA1HK-103	CAPACITOR
	C14	QCTA1CH-820	CAPACITOR
	C15	QETG1HM-105	E CAPACITOR
	C18	QCTA1CH-220	CAPACITOR
	C19	NCB31HK-102A	CAPACITOR
	C21	NCB31HK-102A	CAPACITOR
	C22	NCT06CH-220A	CAPACITOR
	C23	QETC1CM-107	E CAPACITOR
	C24	QEKG1HM-334	E CAPACITOR
	C25	QCTA1CH-220	CAPACITOR
	C26	QCTA1CH-220	CAPACITOR
	C27	QETG1CM-336	E CAPACITOR
	C28	QEKG1AM-107	E CAPACITOR
	C29	QCYA1HK-223	CAPACITOR
	C31	NCF31HZ-103A	CAPACITOR
	C32	QCYA1HK-223	CAPACITOR
	C34	QCYA1HK-223	CAPACITOR
	C35	QCTA1CH-220	CAPACITOR
	C36	QETA1CM-106	E CAPACITOR
	C37	NCB31HK-222A	CAPACITOR
	C39	QEK41HM-104	M CAPACITOR
	C40	QCTA1CH-820	CAPACITOR
	C41	QEKG1CM-106	E CAPACITOR
	C42	QCYA1HK-332	CAPACITOR
	C44	QEN61EM-475	NP E CAPACITOR
	C45	NCB31HK-182A	CAPACITOR
	C46	NCT06CH-180A	CAPACITOR
	C47	QCYA1HK-123	CAPACITOR
	C48	NCT06CH-2R0A	CAPACITOR
	C49	NCT06CH-5R0A	CAPACITOR
	C51	NCT06CH-470A	CAPACITOR
	C60	QEKG1HM-104	E CAPACITOR
	L1	PU60025-R91	PEAKING COIL
	L2	PU60519	IF.TRANSFORMER, SAW MATCH
	L3	PU59152-3R9K	PEAKING COIL
	L4	PU59152-150J	PEAKING COIL
	L5	PU59152-470J	PEAKING COIL
	L7	PU59152-100J	PEAKING COIL
	CF1	PU58558-2	CERAMIC FILTER
	or	PU60774-2	CERAMIC FILTER
	CF2	PU58558-3	CERAMIC FILTER
	or	PU60774-3	CERAMIC FILTER
	CF3	PU58558-4	CERAMIC FILTER
	or	PU60774-4	CERAMIC FILTER
	CF4	PU60774	CERAMIC FILTER
	or	PU58558-Z	CERAMIC FILTER
	or	PU58558	CERAMIC FILTER
	or	PU60774-Z	CERAMIC FILTER
	CF5	PU32990-2	CERAMIC FILTER
	CF6	PU32990-3	CERAMIC FILTER
	CF7	PU59039	CERAMIC FILTER
	CF8	PU32990-4	CERAMIC FILTER
	CF9	PU60680	CERAMIC FILTER, 4.43M TRAP
	SAW1	PU60679	SAW FILTER
	T1	PU60839	IF.TRANSFORMER, S.TRAP
	T2	PU60591	IF.TRANSFORMER, S.DET
	T3	PU60592	IF.TRANSFORMER, AFC
	T4	PU60593	IF.TRANSFORMER, LLD
	T6	PU60669-2	BAND PASS FILTER, 4.5MHZ
	T7	PU60670	W-B.P.F, 5.5-6.5MHZ
	T8	PU59243	FH TRAP
	SLD1	PU60678	SHIELD PLATE
	TML1	PU59935-6	TERMINAL
	TML2	PU59935-8	TERMINAL
	CN1	PU58844-4	CAP HOUSING

— IF SUB (1) <71> —

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
	PWBA	PB20366A1-02	TU IF SUB BOARD ASSEMBLY
	Q501	2SA1532(C)	TRANSISTOR
	Q502	2SB1219(RS)	TRANSISTOR
	Q504	2SD1819A(RS)	TRANSISTOR
	R501	NRSA63J-103N	RESISTOR
	R502	NRSA63J-273N	RESISTOR
	R503	NRSA63J-331N	RESISTOR
	R504	NRSA63J-102N	RESISTOR
	R505	NRSA63J-102N	RESISTOR
	R506	NRSA63J-301N	RESISTOR
	R507	NRSA63J-331N	RESISTOR

SECTION 4
EXPLODED VIEWS AND PARTS LIST

4.1 PACKING ASSEMBLY <M1>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7
14
REMOTE CONTROLLER <M5>
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13
15
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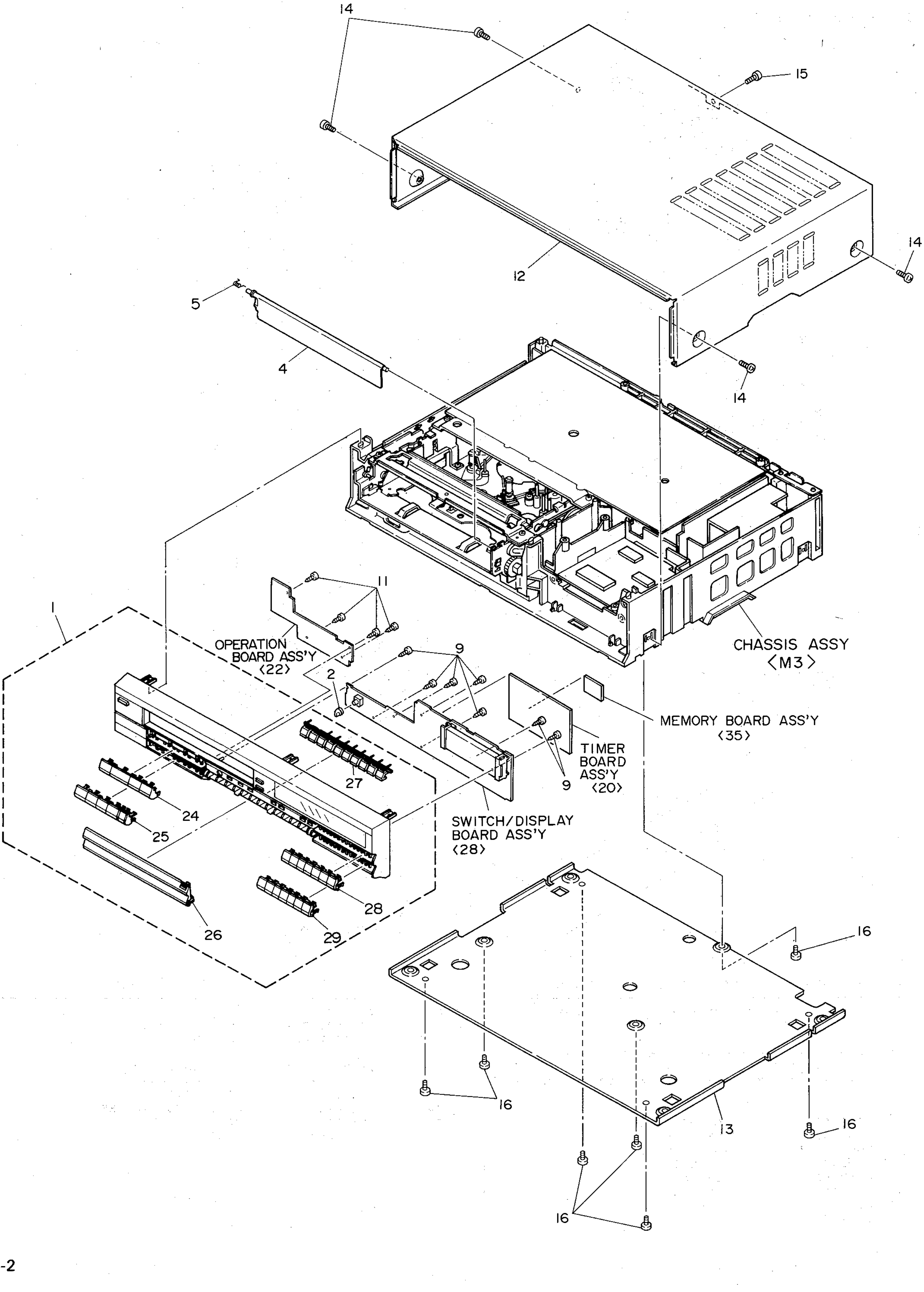
12
2
3
4
9
UNIT
2
1
SERIAL NO. STICKER
16
5
SERIAL NO. STICKER

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
			PACKING ASSEMBLY <M1>
	1	PQ32440	PACKING CASE
	2	PQ32157A-1	CUSHION ASSY
	3	PQ41026-19	PROTECT SHEET
	4	PQM30021-69	POLY BAG
	5	PQ32196	CUSHION
⚠	6	PU59168-3	RF CABLE
⚠		OR PU59167-3	RF CABLE
	7	UM-4NJ2P	BATTERY
	8	QPGA020-02003	POLY BAG
⚠	9	PU30425-987	INSTRUCTIONS
	10	QPGA025-03505	POLY BAG
⚠	11	QMC0271-001	CONVERSION PLUG
	12	TCN-3318	TAPE CATALOG
	13	TCN-3379	TAPE CATALOG
⚠	14	PQ10474C	REMOTE CONTROLLER
	15	PQ31361	BATTERY CAP
	16	PQ31424A	HANDLE ASS'Y

4.2 CABINET ASSEMBLY <M2>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14
5
4
14
11
CHASSIS ASSY
<M3>
1
OPERATION
BOARD ASS'Y
<22>
2
9
MEMORY BOARD ASS'Y
<35>
TIMER
BOARD
ASS'Y
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SWITCH/DISPLAY
BOARD ASS'Y
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16
16

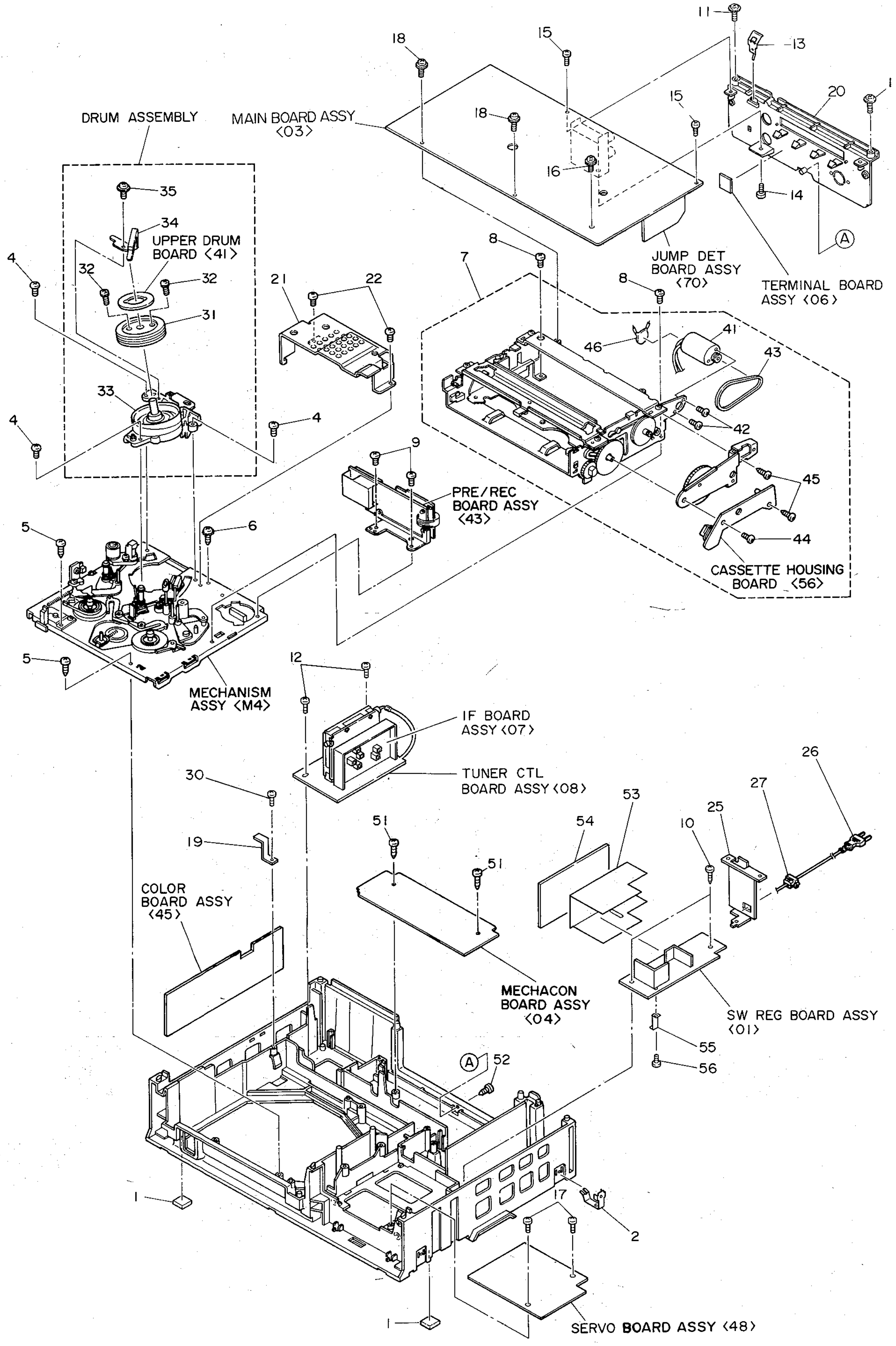
CABINET ASSEMBLY <M2>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	PQ10593C-11	FRONT PANEL ASSY
	2	PQ43081	KNOB(S.VOL.)
	4	PQ31267-144	C.HOUSING DOOR
	5	PQ42410-1-1	TORSION SPRING
	9	SDSF2608Z	TAPPING SCREW,X7
	11	SDSF2608Z	TAPPING SCREW,X4
⚠	12	PQ10545	TOP COVER
⚠	13	PQ10579	BOTTOM COVER
	14	SDSA4014M	TAPPING SCREW,X4
	15	SDSF3010M	TAPPING SCREW,X1
	16	SDSF3008Z	TAPPING SCREW,X7
	24	PQ31729-5	BUTTON(OPE)
	25	PQ20493	BUTTON(OPE)
	26	PQ20442-9-12	DOOR
	27	PQ20443-8	BUTTON(PROG.)
	28	PQ31734-14	BUTTON(TEN KEY)
	29	PQ31734-15	BUTTON(TEN KEY)

CHASSIS ASSEMBLY <M3>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	PQ43013	FOOT,X2
	2	PQ43023	EARTH PLATE
	4	SDSP2608Z	SCREW,X3 FOR DRUM ASSY
	5	SDSA4014Z	TAPPING SCREW,X2
	6	PQ41396	SPECIAL SCREW,M.DECK
	7	PUS28277H	CASS.HOUSING ASSY
	8	SDST2605Z	TAPPING SCREW,X2.C HOUSING
	9	SDST2605Z	TAPPING SCREW, X2
	10	SDSA4012Z	TAPPING SCREW,X2
	11	GPSF2610Z	TAPPING SCREW, X2
	12	SDSF3008Z	TAPPING SCREW,X2
	13	PQ43012	EARTH PLATE
	14	SDST2605Z	TAPPING SCREW
	15	SDSA2608Z	TAPPING SCREW,X2
	16	GPSF2610Z	TAPPING SCREW
	17	SDSF3008Z	TAPPING SCREW,X2
	18	GPST2608Z	SCREW,X2
	19	PQ43398	BRACKET
⚠	20	PQ20625	TERMINAL BOARD ASSY
	21	PQ31171-4	DRUM SHIELD
	22	SDST2605Z	TAPPING SCREW,X2 D SHIELD
⚠	25	PQ32492	TRANS BRACKET
⚠	26	QMP7340-200A	POWER CORD
⚠	27	QHS3771-108	STRAIN RELIEF
	30	SDSF3008Z	TAPPING SCREW
	31	PDM2008D-5	UPPER DRUM ASSY
	32	PDM4165A	DRUM SCREW ASSY,X2
	33	PDM2053B-15	LOWER DRUM MOTOR ASSY
	34	PDM4015B	BRUSH ASSY
	35	LPSP2606Z	SCREW
⚠	41	PQ42385A	CASSETTE MOTOR ASSY
⚠		OR PQ42385B	CASSETTE MOTOR ASSY
	42	SPSP2603Z	SCREW,X2
	43	PQM30003-19	BELT
	44	SPSP2604Z	SCREW
	45	SPST2605Z	TAPPING SCREW,X2
	46	DV710SR223M16	VARISTOR
	51	SDSF3008Z	TAPPING SCREW,X2
	52	SDSF3010M	TAPPING SCREW
	53	PQ32490	COVER
	54	PQ32488	SHIELD PLATE
	55	PQ43646	EARTH PLATE
	56	SBSB3008Z	SCREW

4.3 CHASSIS ASSEMBLY <M3>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MAIN BOARD ASSY <03>
UPPER DRUM BOARD <41>
JUMP DET BOARD ASSY <70>
TERMINAL BOARD ASSY <06>
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PRE/REC BOARD ASSY <43>
CASSETTE HOUSING BOARD <56>
MECHANISM ASSY <M4>
IF BOARD ASSY <07>
TUNER CTL BOARD ASSY <08>
COLOR BOARD ASSY <45>
MECHACON BOARD ASSY <04>
SW REG BOARD ASSY <01>
SERVO BOARD ASSY <48>
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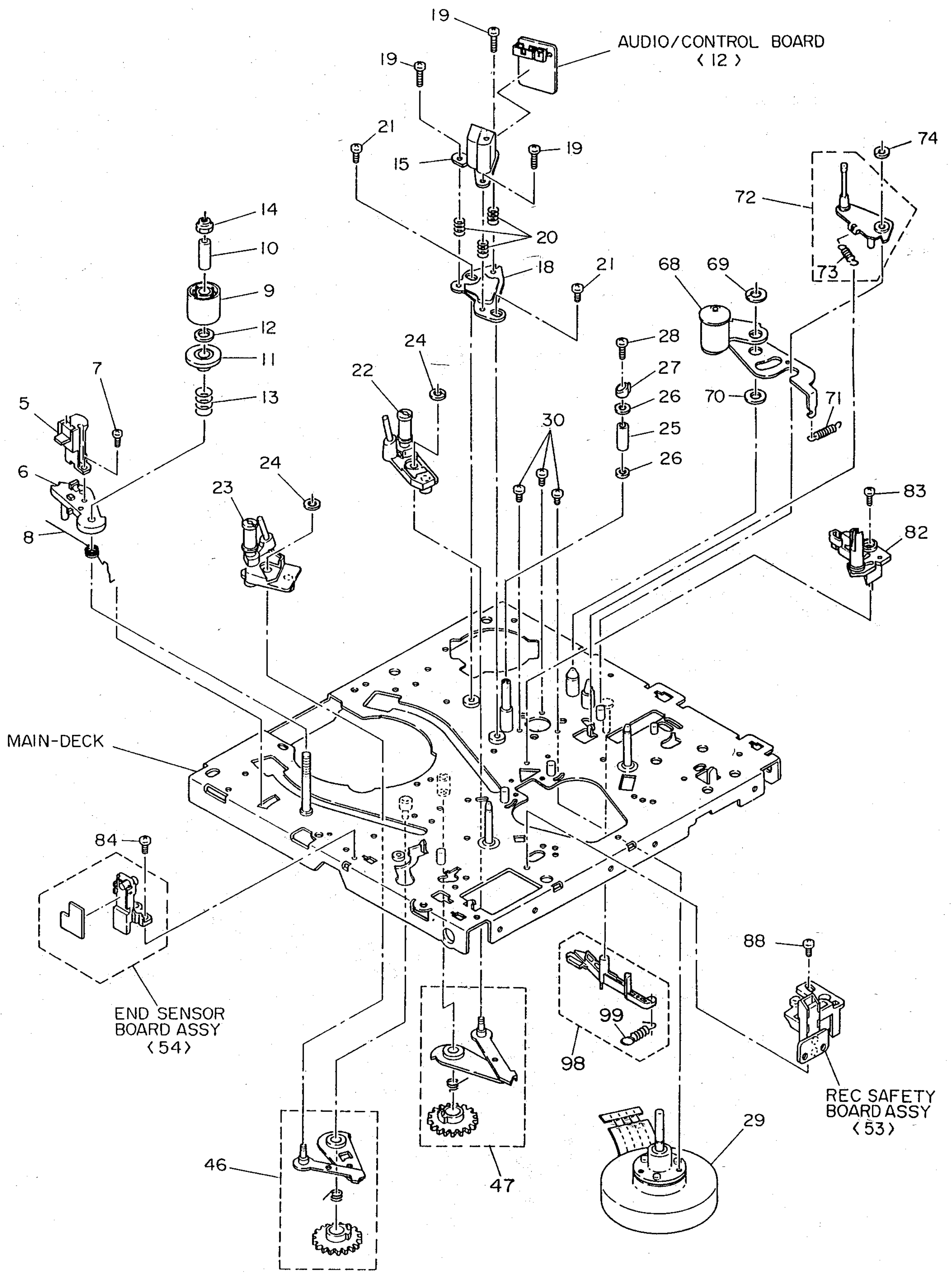
4.4 MECHANISM ASSEMBLY <M4>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AUDIO/CONTROL BOARD
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MAIN-DECK
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END SENSOR
BOARD ASSY
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REC SAFETY
BOARD ASSY
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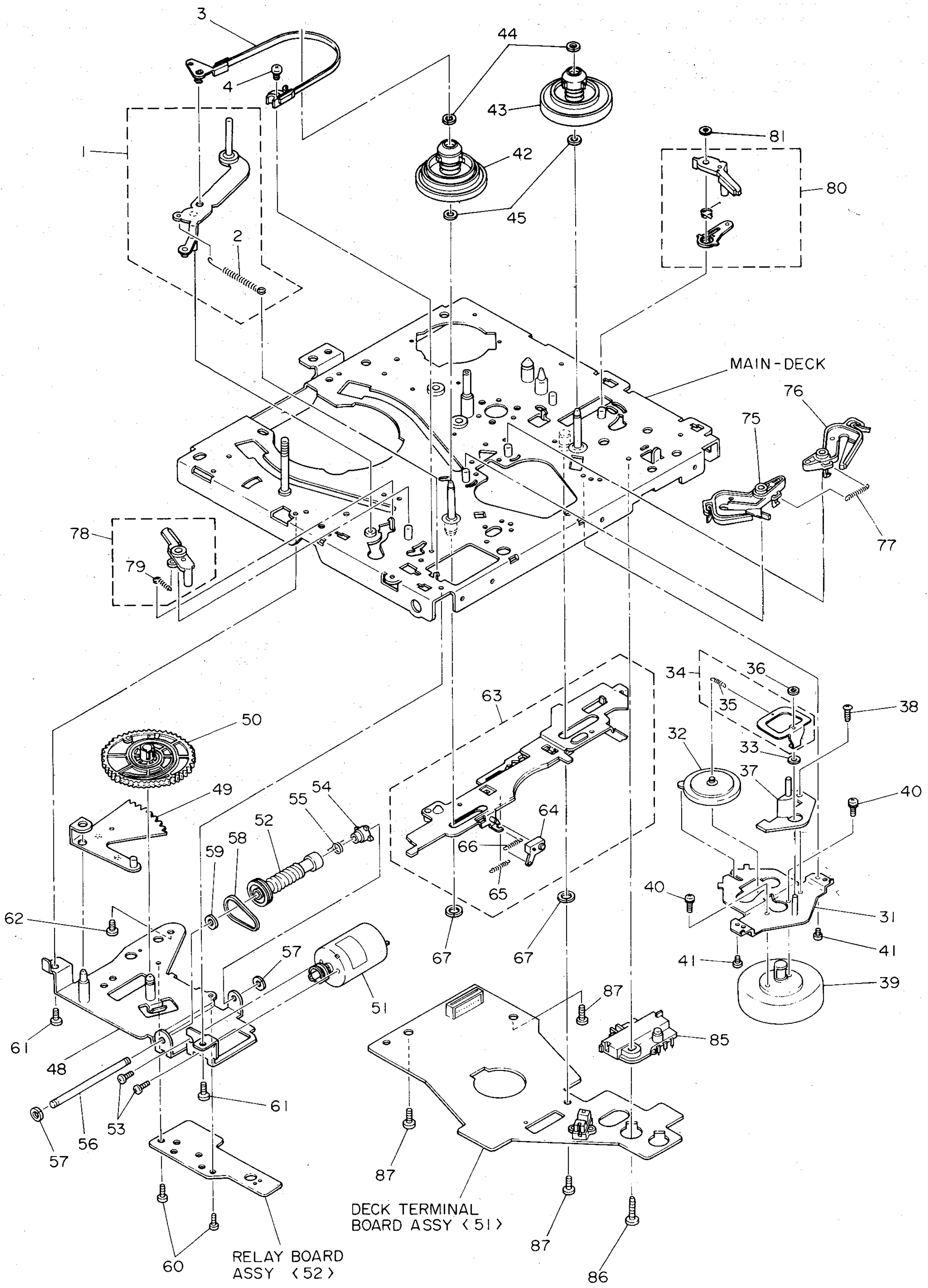
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MAIN-DECK
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87
DECK TERMINAL
BOARD ASSY <51>
87
86
60
RELAY BOARD
ASSY <52>

****

MECHANISM ASSEMBLY <M4>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	PQ41944A-7	TENSION ARM ASSY,INCL.2
	2	PQ41952-3	SPRING
	3	PQ41948A	TENSION BAND ASSY
	4	SDST2606Z	TAPPING SCREW
	5	PU57641-2	FULL ERASE HEAD
	6	PQ31036	FULL ERASE HEAD BASE
	7	SPSG2606Z	TAPPING SCREW
	8	PQ41954-1-1	TORSION SPRING
	9	PQ41955	IMPEDANCE ROLLER
	10	PQ41956	COLLAR
	11	PQ41957	LOWER FLANGE
		OR PQ42958	LOWER FLANGE
	12	PQM30018-39	SPACER
		OR PQM30018-50	SPACER
	13	PQM30002-124	COMPRESSION SPRING
	14	PQ40353	NYLON NUT
	15	PU60560	AUDIO/CONTROL HEAD
	18	PQ42984-2	HEAD BASE
	19	SPSP2608Z	SCREW,X3
	20	PU30080-49	SPRING,X3
	21	SDSP2606Z	SCREW,X2
	22	PQ41963A-2	POLE BASE ASSY(TAKE-UP)
		OR PU59994	POLE BASE ASSY(TAKE-UP)
	23	PQ41969A-2	POLE BASE ASSY(SUP)
		OR PU59993	POLE BASE ASSY(SUPPLY)
	24	PQM30017-5	SLIT WASHER,X2
	25	PU53629-2	TAPE GUIDE
	26	PQ40268-2	GUIDE FLANGE,X2
	27	PQ42999-2-1	GUIDE POLE CAP
	28	SDSP2006Z	SCREW
⚠	29	PU60201V	CAPSTAN MOTOR
	30	SPSP2605N	SCREW,X3
	31	PQ41974A-3	REEL MOTOR BRACKET ASSY
	32	PU58645-1-4	IDLER ARM
	33	Q03093-834	WASHER
	34	PQ41976A-1	SPRING ARM ASSY,INCL.35
	35	PQ42212-1-4	SPRING
	36	PQM30017-22	SLIT WASHER
	37	PQ41978	HOLDER
	38	SPST2606Z	TAPPING SCREW
⚠	39	PU58636W	REEL MOTOR
⚠		OR PU58636M	REEL MOTOR
	40	LPSP2604Z	SCREW,X2
	41	SPST2606Z	TAPPING SCREW,X2
	42	PU59250-1-2	REEL DISK(SUP)
	43	PU58638-1-2	REEL DISK(TU)
	44	PQM30017-5	SLIT WASHER,X2
	45	Q03093-828	WASHER,X2
	46	PQ41979A-5	LOADING ARM ASSY(SUP)
	47	PQ41985B-3	LOADING ARM ASSY(TU)
	48	PQ41992A-2	CAM BRACKET SUB ASSY
	49	PQ41994A-3	ARM GEAR ASSY
	50	PQ20577-2	CONTROL CAM
⚠	51	PQ41996B	MODE MOTOR ASSY
	52	PQ41998A	WORM ASSY
	53	LPSP2604Z	SCREW,X2
	54	PQ42001	WINDMILL
	55	PQ42002	CLUTCH SPRING
	56	PQ42003	WORM SHAFT
	57	PQM30017-5	SLIT WASHER,X2
	58	PQM30003-20	BELT
	59	PQM30018-22	SPACER
	60	SPST2606Z	TAPPING SCREW,X2
	61	SPST2606Z	TAPPING SCREW,X2
	62	SPSP2603Z	SCREW
	63	PQ42038D	PLATE ASSY,INCL.64-66
	64	PQ31044-1-2	LOCK LEVER
	65	PQM30001-191	TENSION SPRING
	66	PQM30001-211	TENSION SPRING
	67	PQM30017-28	SLIT WASHER,X2
	68	PQ42006B	PINCH ROLLER ARM ASSY
	69	PQM30017-28	SLIT WASHER
	70	Q03093-833	WASHER
	71	PQM30001-229	TENSION SPRING
	72	PQ42013B-4	GUIDE ARM ASSY,INCL.73
	73	PQ42029	SPRING
	74	PQM30017-6	SLIT WASHER
	75	PQ42019A-6	MAIN BRAKE ASSY(SUP)
	76	PQ42020B	MAIN BRAKE ASSY(TU)
	77	PQM30001-216	TENSION SPRING
	78	PQ42021A-3	SUB BRAKE ASSY(SUP),INCL.79
	79	PQ42023-1-2	TENSION SPRING
	80	PQ42037A-2	SUB BRAKE ASSY(TU)
	81	PQM30017-6	SLIT WASHER
	82	PU59925-1-1	LED HOLDER,INCL.LED
	83	SPST2606Z	TAPPING SCREW
	84	SPST2606Z	TAPPING SCREW
	85	PU60444	SLIDE ENCODER
	86	SDSP2610Z	SCREW
	87	SDSP2606Z	SCREW,X3
	88	SDST2606Z	TAPPING SCREW
	98	PQ43295A-1	MOTOR BRAKE ASSY,INCL.99
	99	PQ43296	SPRING

SECTION 5
PARTS LIST

SW.REGULATOR BOARD ASSEMBLY <01>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20221A-02	SW.REG BOARD ASSY
	IC1	STR-D1706-F	IC
	IC2	STK5474	IC
	Q1	DTD114ES	TRANSISTOR
	Q11	2SD1406Y	TRANSISTOR
	Q12	DTC144WS	TRANSISTOR
	OR	UN4212	TRANSISTOR
	D1	S1WB(A)60	DIODE
	D2	RU1A	FR DIODE
	D3	RU1A	FR DIODE
	D4	AU01Z	FR DIODE
	D5	AU01Z	FR DIODE
	D6	AU01Z	FR DIODE
	D7	AU01Z	FR DIODE
	D8	AU01Z	FR DIODE
	D9	AU01Z	FR DIODE
	D31	F6P20F	FR DIODE
	OR	FML-12S	FR DIODE
	D32	21DQ04	BARRIER DIODE
	OR	RK14LF-B2	BARRIER DIODE
	D34	AU01Z	FR DIODE
	D35	AU01Z	FR DIODE
	D36	MA165	DIODE
	OR	1SS133	DIODE
	D37	RD4.7ES-T1B3	ZENER DIODE
	D38	AU01Z	FR DIODE
	D39	RD6.2ES-T1B2	ZENER DIODE
	D40	MA165	DIODE
	OR	1SS133	DIODE
	D41	RD10ES-T1B2	ZENER DIODE
	R1	QRZ0078-2R2	W.W.RESISTOR
	R2	QRD121J-154S	RESISTOR
	R3	QRD121J-154S	RESISTOR
	R4	QRG029J-683	OMF RESISTOR
	R5	QRG019J-390	OMF RESISTOR
	R6	QRG019J-331	OMF RESISTOR
	R9	QRZ0078-R39	WW RESISTOR
	R11	QRD161J-333	RESISTOR
⚠	R31	PU60466-R023	FUSIBLE RESISTOR
⚠	R32	PU60466-R037	FUSIBLE RESISTOR
⚠	R33	QRZ0077-220X	FUSIBLE RESISTOR
⚠	R34	QRZ0077-220X	FUSIBLE RESISTOR
	R35	QRZ0077-4R7X	FUSIBLE RESISTOR
	R36	QRD161J-102	RESISTOR
	R38	QRD161J-822	RESISTOR
	R39	QRD161J-682	RESISTOR
	R40	QRD161J-272	RESISTOR
	R41	QRD161J-223	RESISTOR
	R42	QRD161J-333	RESISTOR
⚠	C1	QFZ9022-473	MM CAPACITOR
⚠	C2	QFZ9022-223	MM CAPACITOR
⚠	C3	QCZ9016-102K	CAPACITOR
⚠	C6	QCZ9016-102K	CAPACITOR
⚠	C7	QCZ9016-102K	CAPACITOR
⚠	C8	QCZ9016-102K	CAPACITOR
	C10	QEZ0111-107	E CAPACITOR
	C11	QCY53AK-472	CAPACITOR
	C12	QCY43AK-331	CAPACITOR
	C13	QFV41HJ-333	M CAPACITOR
	C14	QEZ0107-106Z	E CAPACITOR
	C15	QFV41HJ-223	M CAPACITOR
	C16	QFL41HJ-222	M CAPACITOR
	C17	QFV41HJ-124	M CAPACITOR
	C18	QEZ0108-187Z	E CAPACITOR
⚠	C21	QCZ9016-102K	CAPACITOR
⚠	C22	QCZ9016-102K	CAPACITOR
	C23	QED61HM-105	E CAPACITOR
	C31	QEZ0125-228	E CAPACITOR
	C32	QEZ0106-228	E CAPACITOR
	C33	QEZ0104-476Z	E CAPACITOR
	C34	QEZ0107-476Z	E CAPACITOR
	C35	QETB1EM-108	E CAPACITOR
	C36	QETB1AM-108	E CAPACITOR
	C38	QFL41HJ-102	M CAPACITOR
	C39	QFL41HJ-102	M CAPACITOR
	C40	QETC1HM-106	E CAPACITOR
	C41	QETC1AM-107	E CAPACITOR
	C42	QETC1CM-107	E CAPACITOR
	C43	QETC1CM-107	E CAPACITOR
	C45	QETC1HM-226	E CAPACITOR
	C46	QETC1JM-226	E CAPACITOR
	L31	PU56183-330	CHOKE COIL
	L32	PU56183-330	CHOKE COIL
	L33	PU48530-101K	PEAKING COIL
	L34	PU48530-101K	PEAKING COIL
	L35	PU48530-100K	CHOKE COIL
	L36	PU48530-100K	CHOKE COIL
⚠	T1	PU60667	SW.TRANS
⚠	HD1	PU57505	FUSE CLIP
⚠	LF1	PU60347	LINE FILTER
⚠	CP1	ICP-F20	CIRCUIT PROTECTOR
⚠	F1	QMF51E2-1R0	FUSE

MAIN BOARD ASSEMBLY <03>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10123A-01	MAIN BOARD ASSY
⚠	RF1	PU60499	RF CONV & MIXER
	R901	QVZ3521-334	V RESISTOR,V LOCK
	SLD1	PU60501	SHIELD CASE(1)
	SLD2	PU60502	SHIELD CASE(2)
	SLD3	PU60503	SHIELD CASE(3)
	TB1	PU60415A	CONNECTOR BOARD
		-AUDIO SECTION-	
	IC1	LA7295	IC
	Q1	2SC1740S(RS)	TRANSISTOR
	Q2	2SC1740S(RS)	TRANSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	Q3	2SC1740S(RS)	TRANSISTOR
	Q4	DTA124ES	TRANSISTOR
	Q5	DTA114ES	TRANSISTOR
	Q6	DTA124ES	TRANSISTOR
	Q7	DTA124ES	TRANSISTOR
	Q8	DTC124ES	TRANSISTOR
	Q9	DTA124ES	TRANSISTOR
	Q10	DTC124ES	TRANSISTOR
	Q11	DTC124ES	TRANSISTOR
	Q12	2SC1740S(QRS)	TRANSISTOR
	D1	1SS133	DIODE
	OR	MA165	DIODE
	D2	1SS133	DIODE
	OR	MA165	DIODE
	D3	1SS133	DIODE
	OR	MA165	DIODE
	D4	1SS133	DIODE
	OR	MA165	DIODE
	D6	1SS133	DIODE
	OR	MA165	DIODE
	R1	QRD161J-222	RESISTOR
	R2	QRD161J-223	RESISTOR
	R3	QRD161J-222	RESISTOR
	R4	QRD161J-473	RESISTOR
	R5	QRD161J-332	RESISTOR
	R6	QRD161J-682	RESISTOR
	R7	QRD161J-332	RESISTOR
	R8	QRD161J-100	RESISTOR
	R9	QRD161J-122	RESISTOR
	R10	QRD161J-122	RESISTOR
	R11	QRD161J-102	RESISTOR
	R12	QRD161J-153	RESISTOR
	R13	QRD161J-123	RESISTOR
	R14	QRD161J-223	RESISTOR
	R15	QRD161J-223	RESISTOR
	R16	QRD161J-223	RESISTOR
	R17	QRD161J-103	RESISTOR
	R18	QRD161J-223	RESISTOR
	R19	QRD161J-183	RESISTOR
	R20	QRD161J-104	RESISTOR
	R21	QRD161J-104	RESISTOR
	R22	QRD161J-183	RESISTOR
	R23	QRD161J-223	RESISTOR
	R24	QRD161J-333	RESISTOR
	R25	QRD161J-151	RESISTOR
	R26	QRD161J-122	RESISTOR
	R27	QRD161J-153	RESISTOR
	R28	QRD161J-392	RESISTOR
	R29	QRD161J-391	RESISTOR
	R30	QRD161J-151	RESISTOR
	R31	QRD161J-8R2	RESISTOR
	R33	QRD161J-561	RESISTOR
	R34	QRD161J-223	RESISTOR
	R35	QRD161J-331	RESISTOR
	R36	QRD161J-334	RESISTOR
	R37	QRD161J-103	RESISTOR
	R39	QRD161J-395	RESISTOR
	R40	QRD161J-822	RESISTOR
	R41	QRD161J-273	RESISTOR
	R42	QVZ3523-473AZ	V RESISTOR
	OR	QVZ3518-473AZ	V RESISTOR
	R43	QRD161J-153	RESISTOR
	R44	QRD161J-6R8	RESISTOR
	R45	QRD161J-395	RESISTOR
	R48	QRD161J-475	RESISTOR
	C1	QCVB1CM-103	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C2	QETC1HM-105	E CAPACITOR
	C3	QETC1CM-476	E CAPACITOR
	C4	QETC1CM-476	E CAPACITOR
	C5	QETC1HM-105	E CAPACITOR
	C6	QFV71HJ-273	M CAPACITOR
	C7	QFV71HJ-123	M CAPACITOR
	C8	QFV71HJ-473	M CAPACITOR
	C9	QFV71HJ-563	M CAPACITOR
	C10	QEK61EM-335	E CAPACITOR
	C11	QFV71HJ-223	M CAPACITOR
	C12	QFL31HJ-122	M CAPACITOR
	C13	QFL31HJ-222	M CAPACITOR
	C14	QETC1HM-334	E CAPACITOR
	C15	PU60550	E CAPACITOR
	C16	QETB1CM-336	E CAPACITOR
	C17	QFV71HJ-103	M CAPACITOR
	C18	QETC1HM-105	E CAPACITOR
	C20	QFL31HJ-272	M CAPACITOR
	C21	QEK61CM-106	E CAPACITOR
	C23	QCBB1HJ-331	CAPACITOR
	C24	QFV71HJ-473	M CAPACITOR
	C25	QETC1CM-106	E CAPACITOR
	C26	QCXB1CM-272	CAPACITOR
	C27	QFL31HJ-392	M CAPACITOR
	C28	QCVB1CM-103	CAPACITOR
	C29	QCVB1CM-103	CAPACITOR
	C30	QCVB1CM-103	CAPACITOR
	C31	QCVB1CM-103	CAPACITOR
	L1	PU58308-682J	PEAKING COIL
	L2	PU58308-103J	PEAKING COIL
	T1	PU60510-2	OSC TRANSFORMER

-LUMINANCE SECTION-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	IC101	PB20166F	Y MOD.
⚠	IC102	MSM6967RS	IC
⚠	IC202	MSM6989RS	IC
	IC203	NJM2234S	IC
⚠	IC501	MSM6966RS	IC
	IC502	BA7021	IC
	IC503	NJM2233AS	IC
	Q101	2SC1740S(QRS)	TRANSISTOR
	Q103	2SA1309R,S	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q104	2SC1740S(QRS)	TRANSISTOR
	Q107	2SA1309R,S	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q110	DTC124ES	TRANSISTOR
	Q111	DTC124ES	TRANSISTOR
	Q201	DTC124ES	TRANSISTOR
	Q209	2SC1740S(QRS)	TRANSISTOR
	Q210	2SC1740S(QRS)	TRANSISTOR
	Q211	2SA1309R,S	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q212	2SC1740S(QRS)	TRANSISTOR
	Q213	2SC1740S(QRS)	TRANSISTOR
	Q251	2SC1740S(QRS)	TRANSISTOR
	Q252	2SC1740S(QRS)	TRANSISTOR
	Q253	2SA1309R,S	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q254	DTC144ES	TRANSISTOR
	Q256	2SC1740S(QRS)	TRANSISTOR
	Q257	DTA124ES	TRANSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	Q258	DTC144ES	TRANSISTOR
	Q259	2SC1740S(QRS)	TRANSISTOR
	Q260	2SA1309R,S	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q503	DTC124ES	TRANSISTOR
	Q504	DTC124ES	TRANSISTOR
	Q505	2SC1740S(RS)	TRANSISTOR
	Q506	2SA1309R,S	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q507	DTA124ES	TRANSISTOR
	Q508	2SA1309R,S	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q509	DTC124ES	TRANSISTOR
	Q510	DTC124ES	TRANSISTOR
	Q511	DTC124ES	TRANSISTOR
	Q512	DTC124ES	TRANSISTOR
	Q513	2SA1309R,S	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q514	2SC1740S(RS)	TRANSISTOR
	Q515	2SC1740S(RS)	TRANSISTOR
	Q516	2SC1740S(RS)	TRANSISTOR
	Q517	DTC144ES	TRANSISTOR
	D101	MA165	DIODE
	OR	1SS133	DIODE
	D102	MA165	DIODE
	OR	1SS133	DIODE
	D103	MA165	DIODE
	OR	1SS133	DIODE
	D104	RD9.1ES-T1B2	ZENER DIODE
	D105	MA165	DIODE
	OR	1SS133	DIODE
	D203	RD9.1ES-T1B2	ZENER DIODE
	D204	MA165	DIODE
	OR	1SS133	DIODE
	D206	MA165	DIODE
	OR	1SS133	DIODE
	D207	MA165	DIODE
	OR	1SS133	DIODE
	D251	MA165	DIODE
	OR	1SS133	DIODE
	D254	MA165	DIODE
	OR	1SS133	DIODE
	D255	1SS292	DIODE
	D257	1SS133	DIODE
	OR	MA165	DIODE
	D502	1SS133	DIODE
	OR	MA165	DIODE
	D504	RD9.1ES-T1B2	ZENER DIODE
	D505	1SS133	DIODE
	OR	MA165	DIODE
	D506	1SS133	DIODE
	OR	MA165	DIODE
	D507	1SS133	DIODE
	OR	MA165	DIODE
	D508	1SS133	DIODE
	OR	MA165	DIODE
	D509	1SS133	DIODE
	OR	MA165	DIODE
	D512	1SS133	DIODE
	OR	MA165	DIODE
	D513	1SS133	DIODE
	OR	MA165	DIODE
	R101	QRD161J-103	RESISTOR
	R102	QRD161J-182	RESISTOR
	R103	QRD161J-333	RESISTOR
	R104	QRD161J-333	RESISTOR
	R105	QRD161J-331	RESISTOR
	R108	QRD161J-681	RESISTOR
	R109	QRD161J-331	RESISTOR
	R111	QRD161J-102	RESISTOR
	R112	QVZ3518-222	V RESISTOR
	R113	QRD161J-222	RESISTOR
	R114	QRD161J-102	RESISTOR
⚠	R115	QRD161J-181	RESISTOR
	R117	QRD161J-102	RESISTOR
	R119	QRD122J-391	RESISTOR
	R120	QRD161J-333	RESISTOR
	R122	QRD161J-183	RESISTOR
	R124	QRD161J-101	RESISTOR
	R147	QRD161J-562	RESISTOR
	R150	QRD161J-222	RESISTOR
	R152	QRD161J-101	RESISTOR
	R153	QRD161J-332	RESISTOR
	R155	QRD161J-681	RESISTOR
	R160	QRD161J-221	RESISTOR
	R201	QRD161J-181	RESISTOR
	R202	QRD161J-471	RESISTOR
	R203	QRD161J-181	RESISTOR
	R204	QVZ3518-681	V RESISTOR
⚠	R217	QRD161J-181	RESISTOR
	R219	QRD161J-222	RESISTOR
	R220	QRD161J-393	RESISTOR
	R221	QRD161J-473	RESISTOR
	R222	QRD161J-332	RESISTOR
	R223	QVZ3518-682	V RESISTOR
	R224	QRD161J-102	RESISTOR
	R225	QRD161J-122	RESISTOR
	R226	QRD161J-153	RESISTOR
	R227	QRD161J-223	RESISTOR
	R228	QRD161J-561	RESISTOR
	R229	QRD161J-681	RESISTOR
	R230	QRD161J-681	RESISTOR
	R231	QRD161J-681	RESISTOR
	R232	QRD161J-471	RESISTOR
	R233	QRD161J-222	RESISTOR
	R238	QRD161J-123	RESISTOR
	R245	QRD161J-183	RESISTOR
	R246	QRD161J-153	RESISTOR
	R251	QRD161J-222	RESISTOR
	R252	QRD161J-222	RESISTOR
	R253	QRD161J-152	RESISTOR
	R254	QRD161J-681	RESISTOR
	R255	QRD161J-222	RESISTOR
	R260	QRD161J-103	RESISTOR
	R261	QRD161J-394	RESISTOR
	R264	QRD161J-104	RESISTOR
	R265	QRD161J-103	RESISTOR
	R266	QRD161J-562	RESISTOR
	R267	QRD161J-182	RESISTOR
	R268	QRD161J-682	RESISTOR
	R269	QRD161J-104	RESISTOR
	R270	QRD161J-182	RESISTOR
	R271	QRD161J-562	RESISTOR
	R275	QRD161J-103	RESISTOR
	R505	QRD161J-472	RESISTOR
	R506	QRD161J-333	RESISTOR
	R507	QRD161J-103	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R508	QRD161J-102	RESISTOR
	R509	QVZ3518-222	V RESISTOR
	R510	QRD161J-182	RESISTOR
	R511	QRD161J-102	RESISTOR
	R512	QRD161J-392	RESISTOR
⚠	R513	QRD161J-181	RESISTOR
	R514	QRD161J-562	RESISTOR
	R515	QVZ3518-222	V RESISTOR
	R516	QRD161J-222	RESISTOR
	R517	QVZ3518-222	V RESISTOR
	R518	QRD161J-821	RESISTOR
	R519	QRD161J-222	RESISTOR
	R520	QRD161J-750	RESISTOR
	R521	QRD161J-472	RESISTOR
	R522	QRD161J-563	RESISTOR
	R523	QRD161J-104	RESISTOR
	R524	QRD161J-272	RESISTOR
	R525	QRD161J-272	RESISTOR
	R526	QRD161J-563	RESISTOR
	R527	QRD161J-104	RESISTOR
	R528	QRD161J-472	RESISTOR
	R531	QRD161J-102	RESISTOR
	R532	QRD161J-102	RESISTOR
	R533	QRD161J-102	RESISTOR
	R534	QRD161J-103	RESISTOR
	R535	QRD161J-272	RESISTOR
	R536	QRD161J-123	RESISTOR
	R537	QRD161J-103	RESISTOR
	R538	QRD161J-103	RESISTOR
	R539	QRD161J-103	RESISTOR
	R540	QRD161J-682	RESISTOR
	R541	QRD161J-103	RESISTOR
	R542	QRD161J-750	RESISTOR
	R543	QRD161J-103	RESISTOR
	R544	QRD161J-103	RESISTOR
	B	QRD161J-0R0	RESISTOR
	C101	QCSB1HJ-220	CAPACITOR
	C102	QETC1AM-226	E CAPACITOR
	C103	QETC1EM-335	E CAPACITOR
	C104	QCVB1CN-103	CAPACITOR
	C105	QCBB1HJ-121	CAPACITOR
	C106	QCBB1HJ-121	CAPACITOR
	C107	QCSB1HJ-220	CAPACITOR
	C108	QETC1AM-226	E CAPACITOR
	C109	QETC1EM-475	E CAPACITOR
	C110	QCSB1HJ-120	CAPACITOR
	C111	QETC1HM-104	E CAPACITOR
	C112	QETC1EM-475	E CAPACITOR
	C113	QCVB1CN-103	CAPACITOR
	C114	QCVB1CN-103	CAPACITOR
	C115	QCVB1CN-103	CAPACITOR
	C116	QETC0JM-476	E CAPACITOR
	C117	QETC1AM-476	E CAPACITOR
	C118	QCVB1CN-103	CAPACITOR
	C119	QCVB1CN-103	CAPACITOR
	C120	QCVB1CN-103	CAPACITOR
	C121	QETC1CM-106	E CAPACITOR
	C122	QETC1HM-224	E CAPACITOR
	C123	QETC1EM-335	E CAPACITOR
	C124	QETC0JM-337	E CAPACITOR
	C125	QEN61EM-335	NP E CAPACITOR
	C126	QCVB1CN-103	CAPACITOR
	C127	QCVB1CN-103	CAPACITOR
	C128	QCSB1HJ-470	CAPACITOR
	C129	QETC0JM-476	E CAPACITOR
	C130	QCVB1CN-103	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C131	QCVB1CN-103	CAPACITOR
	C132	QETA0JM-476	E CAPACITOR
	C133	QCVB1CN-103	CAPACITOR
	C134	QETC1CM-476	E CAPACITOR
	C149	QEN41AM-226	NP E CAPACITOR
	C152	QCSB1HJ-120	CAPACITOR
	C155	QCVB1CN-103	CAPACITOR
	C201	QCSB1HJ-180	CAPACITOR
	C213	QCVB1CN-103	CAPACITOR
	C221	QETC1AM-107	E CAPACITOR
	C222	QCVB1CN-103	CAPACITOR
	C224	QETC1HM-104	E CAPACITOR
	C225	QETC1EM-475	E CAPACITOR
	C226	QCVB1CN-103	CAPACITOR
	C227	QCVB1CN-103	CAPACITOR
	C229	QETC0JM-476	E CAPACITOR
	C230	QCVB1CN-103	CAPACITOR
	C233	QEK61CM-106	E CAPACITOR
	C234	QETC1CM-476	E CAPACITOR
	C235	QCVB1CN-103	CAPACITOR
	C236	QCSB1HJ-330	CAPACITOR
	C237	QCSB1HJ-270	CAPACITOR
	C238	QETC1AM-476	E CAPACITOR
	C239	QCSB1HJ-200	CAPACITOR
	C244	QCVB1CN-103	CAPACITOR
	C245	QCVB1CN-103	CAPACITOR
	C246	QETC1CM-106	E CAPACITOR
	C247	QETC1CM-106	E CAPACITOR
	C251	QCVB1CN-103	CAPACITOR
	C252	QCVC1CN-103	CAPACITOR
	C253	QCVB1CN-103	CAPACITOR
	C255	QCVB1CN-103	CAPACITOR
	C256	QCC11EJ-104	CAPACITOR
	C257	QCVB1CN-103	CAPACITOR
	C258	QEN50JM-336	NP E CAPACITOR
	C260	QCVB1CN-103	CAPACITOR
	C261	QCVB1CN-103	CAPACITOR
	C501	QCSB1HJ-150	CAPACITOR
	C502	QCBB1HJ-151	CAPACITOR
	C503	QCSB1HJ-100	CAPACITOR
	C504	QCSB1HJ-130	CAPACITOR
	C505	QETB1EM-475	E CAPACITOR
	C506	QCSB1HJ-330	CAPACITOR
	C517	QETC1EM-475	E CAPACITOR
	C518	QETC1HM-104	E CAPACITOR
	C519	QCVB1CN-103	CAPACITOR
	C520	QCVB1CN-103	CAPACITOR
	C521	QCVB1CN-103	CAPACITOR
	C522	QETC0JM-476	E CAPACITOR
	C523	QCVB1CN-103	CAPACITOR
	C524	QETC1AM-476	E CAPACITOR
	C525	QCVB1CN-103	CAPACITOR
	C526	QCVB1CN-103	CAPACITOR
	C527	QCVB1CN-103	CAPACITOR
	C528	QETC1AM-476	E CAPACITOR
	C529	QETC1HM-225	E CAPACITOR
	C530	QETC1AM-226	E CAPACITOR
	C532	QETC0JM-477	E CAPACITOR
	C533	QFN31HJ-123	M CAPACITOR
	C534	QFN31HJ-123	M CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C535	QETC1CM-106	E CAPACITOR
	C536	QETC0JM-476	E CAPACITOR
	C537	QCVB1CN-103	CAPACITOR
	C538	QCSB1HJ-390	CAPACITOR
	C539	QCBB1HJ-181	CAPACITOR
	C540	QCBB1HJ-181	CAPACITOR
	C541	QCBB1HJ-101	CAPACITOR
	C542	QCVB1CN-103	CAPACITOR
	C543	QETB0JM-476	E CAPACITOR
	C544	QCBB1HJ-101	CAPACITOR
	C545	QCBB1HJ-181	CAPACITOR
	C546	QCBB1HJ-181	CAPACITOR
	C547	QCSB1HJ-390	CAPACITOR
	C548	QCVB1CN-103	CAPACITOR
	C549	QETC0JM-476	E CAPACITOR
	C550	QETB0JM-107	E CAPACITOR
	L101	PU59152-121J	PEAKING COIL
	L102	PU59152-221J	PEAKING COIL
	L103	PU59152-680J	PEAKING COIL
	L104	PU59152-330J	PEAKING COIL
	L105	PU59152-101J	PEAKING COIL
	L106	PU48530-101K	PEAKING COIL
	L107	PU59152-101K	PEAKING COIL
	L108	PU59152-680J	PEAKING COIL
	L109	PU48530-101K	PEAKING COIL
	L110	PU59152-180J	PEAKING COIL
	L111	PU48530-101K	PEAKING COIL
	L112	PU48530-101K	PEAKING COIL
	L201	PU59152-680J	PEAKING COIL
	L202	PU59152-101K	PEAKING COIL
	L203	PU48530-101K	PEAKING COIL
	L204	PU59152-560J	PEAKING COIL
	L205	PU59152-390J	PEAKING COIL
	L206	PU48530-101K	PEAKING COIL
	L207	PU48530-101K	PEAKING COIL
	L208	PU48530-101K	PEAKING COIL
	L251	PU48530-101K	PEAKING COIL
	L501	PU59152-121J	PEAKING COIL
	L502	PU59152-680J	PEAKING COIL
	L504	PU59152-101K	PEAKING COIL
	L505	PU48530-101K	PEAKING COIL
	L506	PU48530-101K	PEAKING COIL
	L507	PU48530-101K	PEAKING COIL
	L508	PU48530-101K	PEAKING COIL
	L509	PU59152-820J	PEAKING COIL
	EQ101	PU60162	EQUALIZER
	EQ103	PU60282-2	EQUALIZER
	LPF101	PU60161	LOW PASS FILTER
	LPF102	PU59855	LOW PASS FILTER
	CN102	PU59555-10	CAP HOUSING
		-COLOR SECTION-	
⚠	IC301	PU22046A	C.MODULE BOARD ASSY
	IC351	BA7007	IC
	IC405	NJM2234S	IC
	IC601	NJM2234S	IC
	IC602	NJM2234S	IC
	IC603	NJM2233AS	IC
	IC751	M50255P	IC
	Q301	2SC1740S(QRS)	TRANSISTOR
	Q302	2SC1740S(QRS)	TRANSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	Q311	DTC124ES	TRANSISTOR
	Q312	DTC144ES	TRANSISTOR
	Q313	DTC144ES	TRANSISTOR
	Q314	DTC144ES	TRANSISTOR
	Q315	DTC144WS	TRANSISTOR
	Q316	DTC144ES	TRANSISTOR
	Q317	2SC1740S(QRS)	TRANSISTOR
	Q319	2SC1740S(QRS)	TRANSISTOR
	Q351	2SC1740S(QRS)	TRANSISTOR
	Q402	DTA124ES	TRANSISTOR
	Q403	2SC1740S(QRS)	TRANSISTOR
	Q404	2SC1740S(QRS)	TRANSISTOR
	Q405	2SC1740S(QRS)	TRANSISTOR
	Q411	2SC1740S(QRS)	TRANSISTOR
	Q415	DTC124ES	TRANSISTOR
	Q416	DTC124ES	TRANSISTOR
	Q417	DTC124ES	TRANSISTOR
	Q418	DTC124ES	TRANSISTOR
	Q419	DTC143ES	TRANSISTOR
	Q456	2SA1309R,S	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q457	2SC1740S(QRS)	TRANSISTOR
	Q466	2SC1740S(QRS)	TRANSISTOR
	Q469	DTA124ES	TRANSISTOR
	Q601	2SA1309R,S	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q602	DTC124ES	TRANSISTOR
	Q603	2SA1309R,S	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q604	2SC1740S(RS)	TRANSISTOR
	Q605	2SC1740S(RS)	TRANSISTOR
	Q606	DTC124ES	TRANSISTOR
	Q607	2SC1740S(RS)	TRANSISTOR
	Q608	2SC1740S(RS)	TRANSISTOR
	Q612	2SC1740S(RS)	TRANSISTOR
	Q613	2SC1740S(RS)	TRANSISTOR
	Q614	2SC1740S(RS)	TRANSISTOR
	Q615	2SB643R,S	TRANSISTOR
	Q616	DTA144ES	TRANSISTOR
	Q617	DTC144WS	TRANSISTOR
	Q618	2SB643R,S	TRANSISTOR
	Q619	DTC124ES	TRANSISTOR
	Q620	DTA144ES	TRANSISTOR
	Q621	DTA144ES	TRANSISTOR
	Q622	DTC144ES	TRANSISTOR
	Q623	2SC1740S(RS)	TRANSISTOR
	Q624	DTA144ES	TRANSISTOR
	Q625	DTC144ES	TRANSISTOR
	D301	MA165	DIODE
	OR	1SS133	DIODE
	D302	MA165	DIODE
	OR	1SS133	DIODE
	D303	MA165	DIODE
	OR	1SS133	DIODE
	D351	MA165	DIODE
	OR	1SS133	DIODE
	D355	MA165	DIODE
	OR	1SS133	DIODE
	D356	MA165	DIODE
	OR	1SS133	DIODE
	D357	MA165	DIODE
	OR	1SS133	DIODE
	D358	MA165	DIODE

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
		OR 1SS133	DIODE
	D404	MA165	DIODE
		OR 1SS133	DIODE
	D405	MA165	DIODE
		OR 1SS133	DIODE
	D407	MA165	DIODE
		OR 1SS133	DIODE
	D408	MA165	DIODE
		OR 1SS133	DIODE
	D409	MA165	DIODE
		OR 1SS133	DIODE
	D410	MA165	DIODE
		OR 1SS133	DIODE
	D459	MA165	DIODE
		OR 1SS133	DIODE
	D601	1SS133	DIODE
		OR MA165	DIODE
	D602	1SS133	DIODE
		OR MA165	DIODE
	D603	1SS133	DIODE
		OR MA165	DIODE
	D604	1SS133	DIODE
		OR MA165	DIODE
	D605	1SS133	DIODE
		OR MA165	DIODE
	D606	1SS133	DIODE
		OR MA165	DIODE
	D607	1SS133	DIODE
		OR MA165	DIODE
	D608	1SS133	DIODE
		OR MA165	DIODE
	D609	1SS133	DIODE
		OR MA165	DIODE
	D610	1SS133	DIODE
		OR MA165	DIODE
	D615	1SS133	DIODE
		OR MA165	DIODE
	D618	1SS133	DIODE
		OR MA165	DIODE
	D621	1SS133	DIODE
		OR MA165	DIODE
	D622	1SS133	DIODE
		OR MA165	DIODE
	D623	1SS133	DIODE
		OR MA165	DIODE
	D624	1SS133	DIODE
		OR MA165	DIODE
	D625	1SS133	DIODE
		OR MA165	DIODE
	D626	1SS133	DIODE
		OR MA165	DIODE
	D627	1SS133	DIODE
		OR MA165	DIODE
	D628	1SS133	DIODE
		OR MA165	DIODE
	D629	1SS133	DIODE
		OR MA165	DIODE
	D630	1SS133	DIODE
		OR MA165	DIODE
	D631	1SS133	DIODE
		OR MA165	DIODE
	D632	1SS133	DIODE
		OR MA165	DIODE
	D633	1SS133	DIODE
		OR MA165	DIODE
	D634	1SS133	DIODE
		OR MA165	DIODE

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R301	QRD161J-102	RESISTOR
	R302	QRD161J-102	RESISTOR
	R303	QRD161J-473	RESISTOR
	R304	QRD161J-182	RESISTOR
	R305	QRD161J-681	RESISTOR
	R306	QRD161J-102	RESISTOR
	R307	QRD161J-102	RESISTOR
	R312	QRD161J-391	RESISTOR
	R313	QRD161J-561	RESISTOR
	R314	QRD161J-563	RESISTOR
	R316	QRD161J-221	RESISTOR
	R317	QRD161J-391	RESISTOR
	R318	QRD161J-122	RESISTOR
	R319	QRD161J-393	RESISTOR
	R320	QRD161J-103	RESISTOR
	R321	QRD161J-103	RESISTOR
	R322	QRD161J-361	RESISTOR
	R325	QRD161J-102	RESISTOR
	R326	QRD161J-472	RESISTOR
	R327	QRD161J-274	RESISTOR
	R328	QVZ3518-223	V RESISTOR
	R330	QRD161J-122	RESISTOR
	R331	QRD161J-222	RESISTOR
	R334	QRD161J-102	RESISTOR
	R335	QRD161J-122	RESISTOR
	R336	QRD161J-471	RESISTOR
	R337	QRD161J-152	RESISTOR
	R338	QRD161J-223	RESISTOR
	R339	QRD161J-682	RESISTOR
	R340	QRD161J-102	RESISTOR
	R341	QRD161J-181	RESISTOR
	R347	QRD161J-153	RESISTOR
	R348	QRD161J-103	RESISTOR
	R351	QRD161J-102	RESISTOR
	R352	QRD161J-154	RESISTOR
	R353	QRD161J-563	RESISTOR
	R354	QRD161J-182	RESISTOR
	R355	QVZ3518-472	V RESISTOR
	R356	QRD161J-103	RESISTOR
	R357	QRD161J-562	RESISTOR
	R358	QRD161J-333	RESISTOR
	R359	QRD161J-333	RESISTOR
	R360	QRD161J-102	RESISTOR
	R361	QRD161J-393	RESISTOR
	R364	QRD161J-223	RESISTOR
	R365	QRD161J-333	RESISTOR
	R420	QRD161J-562	RESISTOR
	R421	QRD161J-103	RESISTOR
	R422	QRD161J-153	RESISTOR
	R423	QRD161J-103	RESISTOR
	R424	QRD161J-682	RESISTOR
	R425	QRD161J-472	RESISTOR
	R426	QRD161J-562	RESISTOR
	R428	QRD161J-473	RESISTOR
	R430	QVZ3518-681	V RESISTOR
	R431	QRD161J-561	RESISTOR
	R432	QVZ3518-331	V RESISTOR
	R433	QRD161J-221	RESISTOR
	R434	QRD161J-473	RESISTOR
	R435	QRD161J-223	RESISTOR
	R436	QRD161J-102	RESISTOR
	R437	QRD161J-102	RESISTOR
	R438	QRD161J-820	RESISTOR
	R439	QRD161J-222	RESISTOR
	R440	QRD161J-183	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R441	QRD161J-472	RESISTOR
	R442	QRD161J-153	RESISTOR
	R443	QRD161J-183	RESISTOR
	R444	QRD161J-333	RESISTOR
	R445	QRD161J-103	RESISTOR
	R451	QRD161J-102	RESISTOR
	R452	QVZ3518-681	V RESISTOR
	R459	QRD161J-392	RESISTOR
	R463	QRD161J-393	RESISTOR
	R477	QRD162J-153	RESISTOR
	R478	QRD161J-103	RESISTOR
	R479	QRD161J-222	RESISTOR
	R480	QRD161J-333	RESISTOR
	R481	QRD161J-333	RESISTOR
	R484	QRD161J-222	RESISTOR
	R486	QRD161J-562	RESISTOR
	R487	QRD161J-472	RESISTOR
	R601	QRD161J-393	RESISTOR
	R602	QRD161J-103	RESISTOR
	R605	QRD161J-103	RESISTOR
	R606	QRD161J-393	RESISTOR
	R607	QRD161J-103	RESISTOR
	R608	QRD161J-103	RESISTOR
	R609	QRD161J-103	RESISTOR
	R612	QRD161J-393	RESISTOR
	R613	QRD161J-682	RESISTOR
	R614	QRD161J-153	RESISTOR
	R615	QRD161J-393	RESISTOR
	R616	QRD161J-682	RESISTOR
	R617	QRD161J-222	RESISTOR
	R618	QRD161J-393	RESISTOR
	R619	QRD161J-182	RESISTOR
	R620	QRD161J-472	RESISTOR
	R621	QRD161J-103	RESISTOR
	R622	QRD161J-272	RESISTOR
	R623	QRD161J-393	RESISTOR
	R624	QRD161J-333	RESISTOR
	R626	QRD161J-391	RESISTOR
	R627	QRD161J-331	RESISTOR
	R628	QRD161J-271	RESISTOR
	R629	QRD161J-122	RESISTOR
	R630	QRD161J-562	RESISTOR
	R631	QRD161J-562	RESISTOR
	R632	QRD161J-222	RESISTOR
	R634	QRD161J-103	RESISTOR
	R635	QRD161J-153	RESISTOR
	R636	QRD161J-222	RESISTOR
	R637	QRD161J-153	RESISTOR
	R638	QRD161J-103	RESISTOR
	R639	QVZ3518-222	V RESISTOR
	R640	QVZ3518-222	V RESISTOR
	R641	QRD161J-103	RESISTOR
	R646	QRD161J-682	RESISTOR
	R647	QRD161J-682	RESISTOR
	R649	QRD161J-562	RESISTOR
	R650	QRD161J-153	RESISTOR
	R651	QRD161J-103	RESISTOR
	R652	QRD161J-222	RESISTOR
	R653	QRD161J-103	RESISTOR
	R654	QRD161J-153	RESISTOR
	R655	QVZ3518-681	V RESISTOR
	R656	QVZ3518-681	V RESISTOR
	R657	QRD161J-681	RESISTOR
	R658	QRD161J-821	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R659	QRD161J-103	RESISTOR
	R660	QRD161J-332	RESISTOR
	R661	QRD161J-103	RESISTOR
	R662	QRD161J-103	RESISTOR
	R663	QRD161J-392	RESISTOR
	R664	QRD161J-473	RESISTOR
	R665	QRD161J-183	RESISTOR
	R666	QRD161J-122	RESISTOR
	R667	QRD161J-103	RESISTOR
	C302	QCBB1HJ-820	CAPACITOR
	C303	QCBB1HJ-102	CAPACITOR
	C304	QCVB1CN-103	CAPACITOR
	C305	QFN31HJ-473	M CAPACITOR
	C306	QCSB1HJ-470	CAPACITOR
	C311	QETC1CM-106	E CAPACITOR
	C312	QETB1HM-474	E CAPACITOR
	C313	QFN31HJ-563	M CAPACITOR
	C314	QETC1CM-106	E CAPACITOR
	C315	QETC1HM-225	E CAPACITOR
	C316	QETC1EM-335	E CAPACITOR
	C317	QFN31HJ-473	M CAPACITOR
	C318	QCVB1CN-103	CAPACITOR
	C319	QETC1EM-475	E CAPACITOR
	C320	QEM51AK-107	E CAPACITOR
	C321	QCVB1CN-103	CAPACITOR
	C322	QEK61HM-105	E CAPACITOR
	C323	QEK61HM-475	E CAPACITOR
	C324	QEK61HM-475	E CAPACITOR
	C326	QCVB1CN-103	CAPACITOR
	C327	QETC1HM-105	E CAPACITOR
	C328	QFN31HJ-223	M CAPACITOR
	C329	QCT25CH-220	CAPACITOR
	C330	QCVB1CN-103	CAPACITOR
	C331	QETC1CM-106	E CAPACITOR
	C332	QCBB1HJ-101	CAPACITOR
	C333	QCVB1CN-103	CAPACITOR
	C334	QCBB1HJ-102	CAPACITOR
	C335	QETC1AM-476	E CAPACITOR
	C336	QCVB1CN-103	CAPACITOR
	C337	QCSB1HK-5R6	CAPACITOR
	C340	QCC11EK-273	CAPACITOR
	OR	QCC11EK-273R	CAPACITOR
	C351	QETC1CM-476	E CAPACITOR
	C352	QCVB1CN-103	CAPACITOR
	C353	QETC1AM-336	E CAPACITOR
	C354	QFN31HJ-182	M CAPACITOR
	C355	QFN31HJ-272	M CAPACITOR
	C356	QFN31HJ-223	M CAPACITOR
	C357	QETC1CM-106	E CAPACITOR
	C358	QCVB1CN-103	CAPACITOR
	C422	QCVB1CN-103	CAPACITOR
	C423	QCVB1CN-103	CAPACITOR
	C424	QEK61AM-226	E CAPACITOR
	C426	QCVB1CN-103	CAPACITOR
	C431	QCVB1CN-103	CAPACITOR
	C432	QCVB1CN-103	CAPACITOR
	C433	QCVB1CN-103	CAPACITOR
	C434	QCVB1CN-103	CAPACITOR
	C435	QETC0JM-476	E CAPACITOR
	C436	QCVB1CN-103	CAPACITOR
	C439	QCVB1CN-103	CAPACITOR
	C453	QCVB1CN-103	CAPACITOR
	C454	QCVB1CN-103	CAPACITOR
	C455	QCVB1CN-103	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C461	QCVB1CN-103	CAPACITOR
	C601	QCVB1CN-103	CAPACITOR
	C602	QCVB1CN-103	CAPACITOR
	C603	QCVB1CN-103	CAPACITOR
	C604	QCVB1CN-103	CAPACITOR
	C605	QETC0JM-476	E CAPACITOR
	C606	QCVB1CN-103	CAPACITOR
	C607	QCVB1CN-103	CAPACITOR
	C608	QCVB1CN-103	CAPACITOR
	C609	QCVB1CN-103	CAPACITOR
	C610	QCVB1CN-103	CAPACITOR
	C611	QCVB1CN-103	CAPACITOR
	C612	QEK60JM-476	E CAPACITOR
	C613	QCVB1CN-103	CAPACITOR
	C614	QCVB1CN-103	CAPACITOR
	C615	QCVB1CN-103	CAPACITOR
	C616	QCVB1CN-103	CAPACITOR
	C617	QEK60JM-476	E CAPACITOR
	C628	QCVB1CN-103	CAPACITOR
	C629	QCVB1CN-103	CAPACITOR
	C633	QCVB1CN-103	CAPACITOR
	C634	QCVB1CN-103	CAPACITOR
	C635	QETC0JM-476	E CAPACITOR
	C638	QCVB1CN-103	CAPACITOR
	C639	QCVB1CN-103	CAPACITOR
	C640	QETC0JM-476	E CAPACITOR
	C751	QETC0JM-476	E CAPACITOR
	L302	PU48530-222J	PEAKING COIL
	L303	PU54223-271J	PEAKING COIL
	L311	PU47051-822	COIL
	L312	PU48530-101K	PEAKING COIL
	L313	PU59153-101K	INDUCTOR
	L314	PU59152-150J	PEAKING COIL
	L315	PU59152-820J	PEAKING COIL
	L316	PU48530-101K	PEAKING COIL
	L351	PU49057	LC BLOCK
	L352	PU48530-101K	PEAKING COIL
	L353	PU59153-562J	PEAKING COIL
	L403	PU48530-101K	PEAKING COIL
	L404	PU59152-150J	PEAKING COIL
	L405	PU59152-150J	PEAKING COIL
	L452	PU48530-101K	PEAKING COIL
	L601	PU48530-101K	PEAKING COIL
	L602	PU48530-101K	PEAKING COIL
	L603	PU48530-101K	PEAKING COIL
	L605	PU48530-101K	PEAKING COIL
	L751	PU48530-101K	PEAKING COIL
	EQ301	PU53501-5	EQUALIZER
	EQ501	PU54838	EQUALIZER
	LPF301	PU58022	LOW PASS FILTER
	LPF302	PU54988	LOW PASS FILTER
	OR	PU54988-2	LOW PASS FILTER
	LPF501	PU60055	LOW PASS FILTER
	BPF301	PU54410-2	BAND PASS FILTER
	BPF302	PU60371	BAND PASS FILTER
	CF351	PU56983	CERAMIC FILTER

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	DL301	PU60340	COMB FILTER
	OR	PU60222	2H DELAY LINE
	OR	PU60490	COMB FILTER
	OR	PU58971-3	2H DELAY LINE
	DL401	PU54819	DELAY LINE
⚠	DL601	PU60496	DELAY LINE
⚠	XB301	PU58023	CRYSTAL BLOCK
⚠	X301	PU59335	CRYSTAL RESONATOR
⚠	OR	PU31449-4K	CRYSTAL RESONATOR
	X501	PU60294	CRYSTAL RESONATOR
	X502	PU60492	CRYSTAL RESONATOR
	CN303	PU59555-7	CAP HOUSING
	CN305	PU59555-7	CAP HOUSING

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* MECHACON BOARD ASSEMBLY <04> *

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20222A1-01	M-CTL BOARD ASSY
	IC601	M50965-358SP	IC
	OR	M50965E-334SP	IC
	IC602	BA6259N	IC
	IC603	M54647L	IC
	IC604	BA6222	IC
	Q601	2SC3311A(RS)	TRANSISTOR
	D601	MA165	DIODE
	OR	1SS133	DIODE
	D602	MA165	DIODE
	OR	1SS133	DIODE
	D603	HZS4.3EB2	ZENER DIODE
	D604	HZS7.5EB2	ZENER DIODE
	D605	HZS7.5EB2	ZENER DIODE
	D606	1SS133	DIODE
	OR	MA165	DIODE
	R601	QRD161J-152	RESISTOR
	R602	QRD161J-103	RESISTOR
	R603	QRD161J-103	RESISTOR
	R604	QRD161J-122	RESISTOR
	R605	QRD161J-823	RESISTOR
	R606	QRD161J-102	RESISTOR
	R607	QRD161J-102	RESISTOR
	R608	QRD161J-102	RESISTOR
	R609	QRD161J-472	RESISTOR
	R610	QRD161J-103	RESISTOR
	R611	QRD161J-105	RESISTOR
	R612	QRD161J-103	RESISTOR
	R613	QRD161J-103	RESISTOR
	R614	QRD161J-472	RESISTOR
	R615	QRD161J-472	RESISTOR
	R616	QRD161J-472	RESISTOR
	R617	QRD161J-472	RESISTOR
	R618	QRD161J-472	RESISTOR
	R619	QRD161J-472	RESISTOR
	R620	QRD161J-472	RESISTOR
	R621	QRD161J-472	RESISTOR
	R622	QRD161J-472	RESISTOR
	R623	QRD161J-472	RESISTOR
	R624	QRD161J-472	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R625	QRD161J-472	RESISTOR
	R626	QRD161J-472	RESISTOR
	R627	QRD161J-472	RESISTOR
	R628	QRD161J-124	RESISTOR
	R629	QRD161J-124	RESISTOR
	R630	QRD161J-333	RESISTOR
	R631	QRD161J-472	RESISTOR
	R632	QRD161J-332	RESISTOR
	R633	QRD161J-472	RESISTOR
	R634	QRD161J-103	RESISTOR
	R635	QRD161J-331	RESISTOR
	R636	QRD161J-822	RESISTOR
	R637	QRD161J-472	RESISTOR
	R638	QRD161J-472	RESISTOR
	R639	QRD161J-472	RESISTOR
	R640	QRD161J-472	RESISTOR
	R641	QRD161J-472	RESISTOR
	R642	QRD161J-472	RESISTOR
	R643	QRD161J-472	RESISTOR
	R644	QRD161J-124	RESISTOR
	R645	QRD161J-472	RESISTOR
	R646	QRD161J-124	RESISTOR
	R647	QRD161J-561	RESISTOR
	R648	QRD161J-561	RESISTOR
	R649	QRD161J-331	RESISTOR
	RA601	QRB049J-103	RESISTOR ARRAY
	OR	QRB047J-103	RESISTOR ARRAY
	RA602	QRB049J-472	RESISTOR ARRAY
	OR	QRB047J-472	NETWORK RESISTOR
	RA603	QRB069J-472	NETWORK RESISTOR
	OR	QRB067J-472	NETWORK RESISTOR
	C601	QCFB1EZ-223	CAPACITOR
	C602	QCFB1EZ-223	CAPACITOR
	C604	QETC1EM-335	E CAPACITOR
	C605	QETC1EM-475	E CAPACITOR
	C606	QETC1EM-475	E CAPACITOR
	C607	QETC1EM-475	E CAPACITOR
	C608	QETC1HM-105	E CAPACITOR
	C609	QCC11EK-473	CAPACITOR
	C610	QCF31HP-223	CAPACITOR
	C611	QCF31HP-223	CAPACITOR
	C612	QCC11EK-104	CAPACITOR
	L601	PU59152-100J	PEAKING COIL
	L602	PU59152-2R7J	PEAKING COIL
⚠	CF601	PU60030	RESONATOR
⚠	OR	PU60125	RESONATOR
	WR601	PW30112-G0AF6AF	PARALLEL WIRE
	CN601	PU59934-15	WIRE HOLDER
	CN602	PW30301-06624	DISP/SW WIRE
	OR	PW30312-06624	WIRE ASSY
	CN603	PU59555-5	CAP HOUSING
	CN604	PU58844-7	CAP HOUSING
	CN605	PU58844-9	CAP HOUSING
	CN606	PU59555-10	CAP HOUSING
	CN607	PU59555-9	CAP HOUSING
	CN608	PU58844-4	CAP HOUSING
	CN609	PU58844-10	CAP HOUSING
	CN610	PU58844-2	CAP HOUSING
⚠	CP601	ICP-F20	CIRCUIT PROTECTOR
	CP602	ICP-N25	CIRCUIT PROTECTOR

-MECHACON REGULATOR SECTION-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C1	QETC1CM-107	E CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	CN1	PU58844-15	CAP HOUSING
	CN2	PU58844-4Y	CAP HOUSING
	CN3	PU58844-2R	CAP HOUSING
	CN4	PU58844-4R	CAP HOUSING
	CN5	PU58844-3	CAP HOUSING

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TERMINAL BOARD ASSEMBLY <06>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20222A2	TERMINAL P ASSY
	J1	PU60452	MINI JACK

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IF BOARD ASSEMBLY <07>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10112A-01	IF PWB ASS'Y
	IC1	M51496P	IC
	IC2	M5223P	IC
	IC3	BU4066B	IC
	Q1	2SC2636S,T	TRANSISTOR
	Q2	2SD1450S,T	TRANSISTOR
	Q3	DTC144WU	TRANSISTOR
	Q4	DTC144EU	TRANSISTOR
	Q5	2SA1532(C)	TRANSISTOR
	Q6	2SA1532(C)	TRANSISTOR
	Q7	2SA1576(RS)	TRANSISTOR
	Q8	2SC4081(RS)	TRANSISTOR
	Q9	2SC4081(RS)	TRANSISTOR
	Q11	2SA1532(C)	TRANSISTOR
	Q12	2SA1576(RS)	TRANSISTOR
	Q13	2SA1576(RS)	TRANSISTOR
	Q15	2SA1576(RS)	TRANSISTOR
	Q16	2SC4081(RS)	TRANSISTOR
	Q17	2SC4081(RS)	TRANSISTOR
	Q18	DTA114EU	TRANSISTOR
	Q19	2SK381(C)	FE TRANSISTOR
	Q20	DTC144EU	TRANSISTOR
	Q21	2SC4081(RS)	TRANSISTOR
	Q22	DTC144WU	TRANSISTOR
	Q23	2SC4081(RS)	TRANSISTOR
	Q25	2SC4081(RS)	TRANSISTOR
	Q26	2SK381(C)	FE TRANSISTOR
	Q32	2SC3311A(RS)	TRANSISTOR
	Q33	2SB1030A(RS)	TRANSISTOR
	D1	HVP21-01S4A	V.DIODE
	D2	MTZ11B	ZENER DIODE
	OR	RD11ES-T1B2	ZENER DIODE
	D4	DAN202U	DIODE
	D5	1SS133	DIODE
	D6	1SS133	DIODE
	D7	DAN202U	DIODE
	R1	NRSA63J-750N	S.CHIP RESISTOR
	R2	QVZ3531-471	V RESISTOR
	R3	NRSA63J-822N	S.CHIP RESISTOR
	R4	NRSA63J-472N	S.CHIP RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R5	NRSA63J-561N	RESISTOR
	R6	NRSA63J-102N	S.CHIP RESISTOR
	R7	QRD161J-271	RESISTOR
	R8	NRSA63J-180N	S.CHIP RESISTOR
	R9	NRSA63J-681N	S.CHIP RESISTOR
	R11	QVZ3518-102	V RESISTOR
	R12	NRSA63J-272N	S.CHIP RESISTOR
	R13	NRSA63J-103N	S.CHIP RESISTOR
	R15	NRSA63J-472N	S.CHIP RESISTOR
	R16	NRSA63J-222N	S.CHIP RESISTOR
	R17	QRD181J-104	RESISTOR
	R18	NRSA63J-560N	S.CHIP RESISTOR
	R19	NRSA63J-103N	S.CHIP RESISTOR
	R21	NRSA63J-104N	S.CHIP RESISTOR
	R22	QRD181J-153	RESISTOR
	R23	NRSA63J-102N	S.CHIP RESISTOR
	R24	NRSA63J-821N	S.CHIP RESISTOR
	R25	NRSA63J-104N	S.CHIP RESISTOR
	R26	NRSA63J-753N	S.CHIP RESISTOR
	R27	NRSA63J-473N	S.CHIP RESISTOR
	R28	NRSA63J-474N	S.CHIP RESISTOR
	R29	NRSA63J-104N	S.CHIP RESISTOR
	R32	NRSA63J-104N	S.CHIP RESISTOR
	R33	NRSA63J-154N	S.CHIP RESISTOR
	R34	NRSA63J-393N	S.CHIP RESISTOR
	R35	NRSA63J-102N	S.CHIP RESISTOR
	R36	NRSA63J-271N	S.CHIP RESISTOR
	R37	NRSA63J-102N	S.CHIP RESISTOR
	R38	NRSA63J-394N	S.CHIP RESISTOR
	R41	NRSA63J-561N	S.CHIP RESISTOR
	R42	NRSA63J-471N	S.CHIP RESISTOR
	R43	NRSA63J-101N	S.CHIP RESISTOR
	R44	NRSA63J-102N	S.CHIP RESISTOR
	R45	NRSA63J-331N	S.CHIP RESISTOR
	R46	NRSA63J-103N	S.CHIP RESISTOR
	R47	NRSA63J-750N	S.CHIP RESISTOR
	R49	NRSA63J-331N	S.CHIP RESISTOR
	R51	NRSA63J-102N	S.CHIP RESISTOR
	R52	NRSA63J-472N	S.CHIP RESISTOR
	R53	NRSA63J-102N	S.CHIP RESISTOR
	R54	QRD161J-122	RESISTOR
	R55	QRD161J-102	RESISTOR
	R56	NRSA63J-102N	S.CHIP RESISTOR
	R57	QVZ3518-103	V RESISTOR
	R58	NRSA63J-105N	S.CHIP RESISTOR
	R59	NRSA63J-102N	S.CHIP RESISTOR
	R61	NRSA63J-331N	S.CHIP RESISTOR
	R62	NRSA63J-473N	S.CHIP RESISTOR
	R63	NRSA63J-682N	S.CHIP RESISTOR
	R64	NRSA63J-223N	S.CHIP RESISTOR
	R65	NRSA63J-181N	S.CHIP RESISTOR
	R66	NRSA63J-472N	S.CHIP RESISTOR
	R67	NRSA63J-822N	S.CHIP RESISTOR
	R68	NRSA63J-154N	S.CHIP RESISTOR
	R69	QRD161J-101	RESISTOR
	R71	QRSA08J-271YN	RESISTOR
	R74	NRSA63J-563N	S.CHIP RESISTOR
	R75	NRSA63J-184N	S.CHIP RESISTOR
	R76	NRSA63J-331N	S.CHIP RESISTOR
	R77	NRSA63J-102N	S.CHIP RESISTOR
	R78	NRSA63J-122N	S.CHIP RESISTOR
	R79	NRSA63J-222N	S.CHIP RESISTOR
	R81	NRSA63J-473N	S.CHIP RESISTOR
	R82	NRSA63J-333N	S.CHIP RESISTOR
	R83	NRSA63J-102N	S.CHIP RESISTOR
	R85	NRSA63J-472N	S.CHIP RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R86	NRSA63J-391N	S.CHIP RESISTOR
	R87	NRSA63J-104N	S.CHIP RESISTOR
	R88	NRSA63J-473N	S.CHIP RESISTOR
	R89	NRSA63J-474N	S.CHIP RESISTOR
	R90	NRSA63J-823N	S.CHIP RESISTOR
	R91	NRSA63J-223N	S.CHIP RESISTOR
	R92	NRSA63J-682N	S.CHIP RESISTOR
	R93	QRD161J-103	RESISTOR
	R94	NRSA63J-105N	S.CHIP RESISTOR
	R95	NRSA63J-564N	S.CHIP RESISTOR
	R96	NRSA63J-272N	S.CHIP RESISTOR
	R97	NRSA63J-471N	S.CHIP RESISTOR
	R98	NRSA63J-102N	S.CHIP RESISTOR
	R99	NRSA63J-332N	S.CHIP RESISTOR
	R102	NRSA63J-472N	S.CHIP RESISTOR
	R104	QRD161J-331	RESISTOR
	R105	QRD181J-473	RESISTOR
	C1	QCTA1CH-3R0	FC CAPACITOR
	C2	QCTA1CH-3R0	FC CAPACITOR
	C3	NCB31HK-271A	CAPACITOR
	C4	QCYA1HK-222	CAPACITOR
	C5	QCYA1HK-222	CAPACITOR
	C6	QCYA1HK-222	CAPACITOR
	C7	QCYA1HK-222	CAPACITOR
	C8	PU57601-224MEZ	E CAPACITOR
	C9	QCYA1HK-103	CAPACITOR
	C11	NCB31HK-222A	S CHIP CAP
	C12	QETG1CM-476	E CAPACITOR
	C13	QCYA1HK-103	CAPACITOR
	C14	QCTA1CH-820	CAPACITOR
	C15	QETG1HM-335	E CAPACITOR
	C18	QCTA1CH-220	CAPACITOR
	C19	NCB31HK-102A	S CHIP CAP
	C21	NCB31HK-102A	S CHIP CAP
	C22	NCT06CH-470A	S.CHIP CAP
	C23	QETC1CM-107	E CAPACITOR
	C24	QEKG1HM-334	E CAPACITOR
	C25	QCTA1CH-220	CAPACITOR
	C26	QCTA1CH-220	CAPACITOR
	C27	QETG1CM-336	E CAPACITOR
	C28	QETG1CM-336	E CAPACITOR
	C29	QCYA1HK-223	CAPACITOR
	C31	NCF31HK-103A	CAPACITOR
	C32	QCYA1HK-223	CAPACITOR
	C33	QCYA1HK-223	CAPACITOR
	C34	QCYA1HK-223	CAPACITOR
	C35	QCTA1CH-220	CAPACITOR
	C36	QETG1CM-106	E CAPACITOR
	C37	NCB31HK-222A	S CHIP CAP
	C38	NCT06CH-470A	S.CHIP CAP
	C39	QEK41HM-104	M CAPACITOR
	C40	QCTA1CH-820	CAPACITOR
	C41	QEKG1CM-106	E CAPACITOR
	C42	QCYA1HK-472	CAPACITOR
	C43	QEK41HM-105	E CAPACITOR
	C44	QEN61EM-475	NP E CAPACITOR
	C45	NCB31HK-182A	S.CHIP CAP
	C46	NCT06CH-330A	S CHIP CAP
	C47	QCYA1HK-123	CAPACITOR
	C48	NCT06CH-2R0A	S.CHIP CAP
	C49	NCT06CH-5R0A	CAPACITOR
	C51	NCT06CH-470A	S CHIP CAP

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C60	QEKG1HM-104	E CAPACITOR
	L1	PU60025-1R0	PEAKING COIL
	L2	PU60519	IF.TRANSFORMER
	L3	PU59152-3R9K	PEAKING COIL
	L4	PU59152-150J	PEAKING COIL
	L5	PU59152-470J	PEAKING COIL
	L7	PU59152-220J	PEAKING COIL
	CF1	PU58558-2	CERAMIC FILTER
	CF2	PU58558-3	CERAMIC FILTER
	CF3	PU58558-4	CERAMIC FILTER
	CF4	PU58558	CERAMIC FILTER
	CF5	PU32990-2	CERAMIC FILTER
	CF6	PU32990-3	CERAMIC FILTER
	CF7	PU59039	CERAMIC FILTER
	CF8	PU32990-4	CERAMIC FILTER
	CF9	PU60680	CERAMIC FILTER
	SAW1	PU60679	SAW FILTER
	T1	PU60590	IF.TRANSFORMER
	T2	PU60591	IF.TRANSFORMER
	T3	PU60592	IF.TRANSFORMER
	T4	PU60593	IF.TRANSFORMER
	T6	PU60669	BAND PASS FILTER
	T7	PU60670	W-B.P.F
	T8	PU59243	F.HTRAP

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TUNER CONTROL BOARD ASSEMBLY <08>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20208A1-01	TU/CTL BOARD ASSY
⚠	TNR	PU36421-3	U/V TUNER
	IC201	LA7910	IC
	IC202	M5223P	IC
	Q201	2SB810H,J	TRANSISTOR
	Q202	DTC144ES	TRANSISTOR
		OR 2SC3399	TRANSISTOR
		OR UN4213	TRANSISTOR
	Q204	2SC3311A(S)	TRANSISTOR
	Q205	2SA720	TRANSISTOR
		OR 2SB1278(QR)	TRANSISTOR
	Q206	2SC1740S(S)	TRANSISTOR
		OR 2SC3311A(S)	TRANSISTOR
	Q210	DTA114ES	TRANSISTOR
	Q211	DTC144ES	TRANSISTOR
	Q215	2SD1450S,T	TRANSISTOR
	Q216	DTA114TS	TRANSISTOR
	Q217	DTC144ES	TRANSISTOR
	Q218	DTC114ES	TRANSISTOR
	D201	LTZ-MR15	ZENER DIODE
	D202	HZT33-02	ZENER DIODE
	D203	1SS133	DIODE
	R201	QRD161J-182	RESISTOR
	R202	QRD161J-153	RESISTOR
	R206	QRD161J-332	RESISTOR
	R208	QRD161J-121	RESISTOR
	R209	QRD161J-473	RESISTOR
	R210	QRD161J-103	RESISTOR
	R211	QRD161J-103	RESISTOR
	R212	QRD161J-333	RESISTOR
	R214	QRD161J-394	RESISTOR
	R215	QRD161J-154	RESISTOR
	R216	QRD161J-154	RESISTOR
	R217	QRD161J-154	RESISTOR
	R218	QRD161J-103	RESISTOR
	R225	QRD161J-472	RESISTOR
	R226	QRD161J-472	RESISTOR
	R227	QRD161J-104	RESISTOR
	R228	QRD161J-472	RESISTOR
	R235	QRD161J-472	RESISTOR
	R236	QRD161J-472	RESISTOR
	R237	QRD161J-123	RESISTOR
	R238	QRD161J-123	RESISTOR
	R262	QRD161J-103	RESISTOR
	R263	QRD161J-103	RESISTOR
	R271	QRD161J-473	RESISTOR
	R273	QRD161J-222	RESISTOR
	R277	QRD161J-222	RESISTOR
	C202	QETC1CM-106	E CAPACITOR
	C204	QCBB1HJ-101	CAPACITOR
	C205	QETC1HM-106	E CAPACITOR
	C207	QCVB1CM-103	CAPACITOR
	C208	QFV71HJ-333	M CAPACITOR
	C209	QFV71HJ-153	M CAPACITOR
	C210	QFV71HJ-333	M CAPACITOR
	C211	QFV71HJ-153	M CAPACITOR
	C215	QETC1CM-106	E CAPACITOR
	C216	QETC1HM-105	E CAPACITOR
	C217	QETC1CM-106	E CAPACITOR
	C218	QETC1EM-335	E CAPACITOR
	C219	QETC1CM-106	E CAPACITOR
	C221	QETC1CM-106	E CAPACITOR
	C222	QETC1CM-106	E CAPACITOR
	C223	QEK61CM-476	E CAPACITOR
	C224	QEK61HM-224	E CAPACITOR
	L204	PU59152-6R8K	PEAKING COIL
⚠	TH201	OR PU52108-4R7KT	POSISTOR
⚠		OR PU52108-4R7T	POSISTOR
⚠		OR PU52108-4R7	POSISTOR
	HD1	PU36378	HOLDER
	CN201	PU59555-8	CAP HOUSING
	CN202	PU58844-4	CAP HOUSING
⚠	CP201	ICP-F10	CIRCUIT PROTECTOR
	JP4	QWE211-60A2A2	JUMP WIRE

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AUDIO/CTL HEAD BOARD <12>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB40029	AC HEAD BOARD
	CN1	PU58844-103B	CAP HOUSING
	CN2	PU58844-104	CAP HOUSING

TIMER BOARD ASSEMBLY <20>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10137A1-02	T/D/S PWB ASS'Y
	IC1	UPD75212ACW-014	IC
	IC2	M5278L56	IC
	IC3	IC-PST523H-2	IC
	Q1	2SC3311A(RS)	TRANSISTOR
	Q2	2SK656	FE TRANSISTOR
	D1	1SS133	DIODE
	D2	1SS133	DIODE
	D3	1SS133	DIODE
	D13	1SS132	DIODE
	D15	1SS132	DIODE
	D17	1SS133	DIODE
	D19	RD9.1ES-T1B2	ZENER DIODE
	D20	1SS133	DIODE
	R1	QRD161J-682	RESISTOR
	R2	QRD161J-103	RESISTOR
	R3	QRD161J-104	RESISTOR
	R4	QRD161J-102	RESISTOR
	R6	QRD161J-273	RESISTOR
	R7	QRD161J-472	RESISTOR
	R9	QRD161J-102	RESISTOR
	R11	QRD161J-103	RESISTOR
	R12	QRD161J-103	RESISTOR
	R14	QRD161J-103	RESISTOR
	R15	QRD161J-103	RESISTOR
	R16	QRD161J-103	RESISTOR
	R17	QRD161J-103	RESISTOR
	R18	QRD161J-103	RESISTOR
	R19	QRD161J-103	RESISTOR
	R20	QRD161J-103	RESISTOR
	R22	QRD161J-102	RESISTOR
	R25	QRD161J-103	RESISTOR
	R26	QRD161J-103	RESISTOR
	R27	QRD161J-103	RESISTOR
	R28	QRD161J-103	RESISTOR
	R29	QRD161J-103	RESISTOR
	R30	QRD161J-103	RESISTOR
	R31	QRD161J-333	RESISTOR
	R32	QRD161J-333	RESISTOR
	R35	QRD161J-333	RESISTOR
	R36	QRD161J-333	RESISTOR
	R37	QRD161J-333	RESISTOR
	R38	QRD161J-102	RESISTOR
	R39	QRD161J-333	RESISTOR
	RA2	QRB047J-224	NETWORK RESISTOR
		OR QRB049J-224	NETWORK RESISTOR
	RA3	QRB087J-224	NETWORK RESISTOR
		OR QRB089J-224	NETWORK RESISTOR
	C1	QET61CM-336	E CAPACITOR
	C2	QET60JM-336	E CAPACITOR
	C3	QETA0JM-338	E CAPACITOR
	C7	QCVB1CN-103	CAPACITOR
	C8	QCVB1CN-103	CAPACITOR
	C9	QCVB1CN-103	CAPACITOR
	C10	QET61CM-106	E CAPACITOR
	C11	QCT30CH-120	CAPACITOR
	C12	PU57672-200	TRIMMER CAPACITOR
	C14	QET60JM-336	E CAPACITOR
	C15	QCBB1HJ-471	CAPACITOR
	C16	QET61HM-336	E CAPACITOR
⚠	X2	PU60226	CRYSTAL RESONATOR

OPERETION BOARD ASSEMBLY <22>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20071G1	OPERATION BOARD ASSEMBLY
	IC201	GP1U501	INFRARED RAYS UNIT
		OR SPS-413	INFRARED RAYS UNIT
	D200	MTZ5.1B	ZENER DIODE
	D201	SLR-55MC3F	LE DIODE
	D202	SLR-55MC3F	LE DIODE
	R200	QRD161J-821	RESISTOR
	R211	QRD161J-222	RESISTOR
	R212	QRD161J-222	RESISTOR
	R213	QRD161J-332	RESISTOR
	R214	QRD161J-472	RESISTOR
	R215	QRD161J-103	RESISTOR
	R216	QRD161J-222	RESISTOR
	R217	QRD161J-222	RESISTOR
	R221	QRD161J-471	RESISTOR
	R225	QRD161J-332	RESISTOR
	R228	QRD161J-223	RESISTOR
	R229	QRD161J-563	RESISTOR
	S201	PU57550	TACT SWITCH
	S203	PU57550	TACT SWITCH
	S204	PU57550	TACT SWITCH
	S205	PU57550	TACT SWITCH
	S206	PU57550	TACT SWITCH
	S207	PU57550	TACT SWITCH
	S208	PU57550	TACT SWITCH
	S209	PU57550	TACT SWITCH
	S213	PU57550	TACT SWITCH
	S214	PU57550	TACT SWITCH
	HD1	PQ31805-1-3	HOLDER(POWER.LED)
	CN201	PW30202-05D58	WIRE ASSY
		PU59555-105	CAP HOUSING
	CN203	PU59513-3	CAP HOUSING

SWITCH /DISPLAY BOARD ASSEMBLY <28>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	FDP	PU59951-2	FLUORESCENT DISPLAY PANEL
	PWBA	PB10137A2-02	SWITCH/DISPLAY BOARD ASSY
	IC202	M50255P	IC
	D101	1SS132	DIODE
	D102	1SS132	DIODE

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	D103	1SS132	DIODE
	D104	1SS132	DIODE
	D105	1SS132	DIODE
	D106	1SS132	DIODE
	D107	1SS132	DIODE
	D108	1SS132	DIODE
	D109	1SS132	DIODE
	D202	SLH-56VC3F	LE DIODE
	D203	SLH-56DC3F	LE DIODE
	D204	SLR-55MC3F	LE DIODE
	D205	SLR-55MC3F	LE DIODE
	D206	SLR-55MC3F	LE DIODE
	D801	SLH-34VR3F	LE DIODE
	D802	SLH-34VR3F	LE DIODE
	D803	SLH-34VR3F	LE DIODE
	D804	SLH-34VR3F	LE DIODE
	D805	SLH-34VR3F	LE DIODE
	D806	SLH-34VR3F	LE DIODE
	D807	SLH-34VR3F	LE DIODE
	D808	SLH-34VR3F	LE DIODE
	D809	SLH-34VR3F	LE DIODE
	R202	QRD161J-331	RESISTOR
	R203	QRD161J-331	RESISTOR
	R204	QRD161J-331	RESISTOR
	R230	QRD161J-472	RESISTOR
	R231	QRD161J-472	RESISTOR
	R402	PU59166	V RESISTOR
	R801	QRD161J-331	RESISTOR
	R802	QRD161J-331	RESISTOR
	R807	QRD161J-331	RESISTOR
	S1	PU53598	TACT SWITCH
	S2	PU53598	TACT SWITCH
	S3	PU53598	TACT SWITCH
	S4	PU53598	TACT SWITCH
	S5	PU53598	TACT SWITCH
	S6	PU53598	TACT SWITCH
	S7	PU53598	TACT SWITCH
	S8	PU53598	TACT SWITCH
	S9	PU53598	TACT SWITCH
	S10	PU53598	TACT SWITCH
	S12	PU53598	TACT SWITCH
	S13	PU53598	TACT SWITCH
	S14	PU53598	TACT SWITCH
	S17	PU53598	TACT SWITCH
	S18	PU53598	TACT SWITCH
	S19	PU53598	TACT SWITCH
	S21	PU53598	TACT SWITCH
	S22	PU53598	TACT SWITCH
	S23	PU53598	TACT SWITCH
	S24	PU53598	TACT SWITCH
	S25	PU53598	TACT SWITCH
	S26	PU53598	TACT SWITCH
	S27	PU53598	TACT SWITCH
	S28	PU53598	TACT SWITCH
	S210	PU53598	TACT SWITCH
	S211	PU53598	TACT SWITCH
	S402	PU58488-1-1	SLIDE SWITCH
	S403	PU58486-1-1	SLIDE SWITCH
	S406	PU58486-1-1	SLIDE SWITCH
	S801	PU58486-1-1	SLIDE SWITCH
	S802	PU58909	SLIDE SWITCH
	S803	PU58486-1-1	SLIDE SWITCH
	S804	PU58486-1-1	SLIDE SWITCH
	HD1	PQM30038-2-2	LED HOLDER,X14
	HD2	PQ31333-1-2	D.HOLDER (L)
	HD3	PQ31334-1-2	D.HOLDER (R)

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* MEMORY BOARD ASSEMBLY <35> *

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20208A2	MEMORY BOARD ASSY
	IC101	MN1220	IC
	R101	QRD161J-104	RESISTOR
	R102	QRD161J-104	RESISTOR
	R103	QRD161J-104	RESISTOR
	CN101	PU60488-7	CAP HOUSING

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* UPPER DRUM BOARD <41> *

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWB1	PDM3017	UPPER DRUM BOARD

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* PRE/REC BOARD ASSEMBLY <43> *

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB30067A	PRE/REC BOARD ASSY
	IC1	HA118019NT	IC
	Q1	2SA1309R,S	TRANSISTOR
	Q2	2SA1309R,S	TRANSISTOR
	Q3	2SC1740S(RS)	TRANSISTOR
	Q4	2SC1740S(RS)	TRANSISTOR
	Q5	DTC124ES	TRANSISTOR
	Q6	DTC124ES	TRANSISTOR
	Q7	DTC144WS	TRANSISTOR
	Q8	DTC124ES	TRANSISTOR
	Q9	DTC124ES	TRANSISTOR
	Q10	DTA124ES	TRANSISTOR
	Q11	DTA124ES	TRANSISTOR
	D1	MA165	DIODE
		OR 1SS133	DIODE
	D2	MA165	DIODE
		OR 1SS133	DIODE
	D3	MA165	DIODE
		OR 1SS133	DIODE
	R1	QRD161J-102	RESISTOR
	R2	QRD161J-182	RESISTOR
	R3	QRD161J-222	RESISTOR
	R4	QRD161J-561	RESISTOR
	R5	QRD161J-681	RESISTOR
	R6	QRD161J-561	RESISTOR
	R7	QRD161J-332	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R8	QRD161J-562	RESISTOR
	R9	QRD161J-102	RESISTOR
	R10	QRD161J-102	RESISTOR
	R11	QRD161J-681	RESISTOR
	R12	QRD161J-122	RESISTOR
	R13	QRD161J-681	RESISTOR
	R14	QRD161J-102	RESISTOR
	R15	QRD161J-182	RESISTOR
	R16	QRD161J-222	RESISTOR
	R17	QRD161J-223	RESISTOR
	R18	QRD161J-223	RESISTOR
	R19	QRD161J-223	RESISTOR
	R20	QRD161J-184	RESISTOR
	R21	QRD161J-223	RESISTOR
	R22	QRD161J-474	RESISTOR
	R23	QRD161J-223	RESISTOR
	R24	QRD161J-103	RESISTOR
	R25	QRD161J-103	RESISTOR
	R26	QRD161J-103	RESISTOR
	R27	QRD161J-103	RESISTOR
	R28	QRD161J-681	RESISTOR
	R29	QRD161J-561	RESISTOR
	R30	QRD161J-820	RESISTOR
	R31	QRD161J-820	RESISTOR
	R32	PU57457-221	V RESISTOR
	R33	PU57457-221	V RESISTOR
	C1	QCBB1HJ-471	CAPACITOR
	C2	QCSB1HJ-180	CAPACITOR
	C3	QCVB1CN-103	CAPACITOR
	C4	QCSB1HJ-160	CAPACITOR
	C5	QCSB1HJ-150	CAPACITOR
	C6	QCVB1CN-103	CAPACITOR
	C7	QCSB1HJ-200	CAPACITOR
	C8	QCBB1HJ-151	CAPACITOR
	C9	QCSB1HJ-240	CAPACITOR
	C10	QCBB1HJ-561	CAPACITOR
	C11	QCSB1HJ-220	CAPACITOR
	C12	QCSB1HJ-360	CAPACITOR
	C13	QCVB1CN-103	CAPACITOR
	C14	QCC11EJ-473	CAPACITOR
	C15	QCVB1CN-103	CAPACITOR
	C16	QEK60JM-476	E CAPACITOR
	C17	QCVB1CN-103	CAPACITOR
	C18	QCBB1HJ-681	CAPACITOR
	C19	QEK61HM-104	E CAPACITOR
	C20	QCVB1CN-103	CAPACITOR
	C21	QCSB1HJ-680	CAPACITOR
	C22	QCVB1CN-103	CAPACITOR
	C24	QCVB1CN-103	CAPACITOR
	C25	QFZ0096-224	MM CAPACITOR
	C28	QFZ0096-224	MM CAPACITOR
	C29	QCVB1CN-103	CAPACITOR
	C30	QCVB1CN-103	CAPACITOR
	C31	QFZ0096-224	MM CAPACITOR
	C32	QCSB1HJ-270	CAPACITOR
	C33	QCSB1HJ-270	CAPACITOR
	C34	QFZ0096-224	MM CAPACITOR
	C35	QCVB1CN-103	CAPACITOR
	C36	QEK60JM-476	E CAPACITOR
	C37	QCVB1CN-103	CAPACITOR
	L1	PU59152-220J	PEAKING COIL
	L2	PU59152-560J	PEAKING COIL
	L3	PU59152-330J	PEAKING COIL
	L4	PU59152-151J	PEAKING COIL
	L6	PU59152-330J	PEAKING COIL
	L7	PU59152-560J	PEAKING COIL
	L8	PU48530-101K	PEAKING COIL
	L9	PU48530-101K	PEAKING COIL
	L10	PU59152-560J	PEAKING COIL
	TP	PU57545	TEST PIN

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* SERVO BOARD ASSEMBLY <48> *

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20219A	SERVO PWB ASS'Y
	IC1	HD49722NT	IC
	IC61	BU2767S	IC
	IC62	BU4069UB	IC
	Q1	DTA124ES	TRANSISTOR
		OR UN4112	TRANSISTOR
		OR 2SA1346	TRANSISTOR
	Q2	DTA124ES	TRANSISTOR
		OR 2SA1346	TRANSISTOR
		OR UN4112	TRANSISTOR
	D1	1SS133	DIODE
		OR MA165	DIODE
	D2	1SS133	DIODE
		OR MA165	DIODE
	D3	1SS133	DIODE
		OR MA165	DIODE
	D5	1SS133	DIODE
		OR MA165	DIODE
	D6	1SS133	DIODE
		OR MA165	DIODE
	D9	1SS133	DIODE
		OR MA165	DIODE
	D10	1SS133	DIODE
		OR MA165	DIODE
	D12	1SS133	DIODE
		OR MA165	DIODE
	D21	1SS133	DIODE
		OR MA165	DIODE
	D24	1SS133	DIODE
		OR MA165	DIODE
	D25	1SS133	DIODE
		OR MA165	DIODE
	D62	1SS133	DIODE
		OR MA165	DIODE
	D64	1SS133	DIODE
		OR MA165	DIODE
	D65	1SS133	DIODE
		OR MA165	DIODE
	D66	1SS133	DIODE
		OR MA165	DIODE
	D67	1SS133	DIODE
		OR MA165	DIODE
	D68	1SS133	DIODE
		OR MA165	DIODE
	D70	1SS133	DIODE
		OR MA165	DIODE
	D71	1SS133	DIODE
		OR MA165	DIODE
	R1	QRD161J-103	RESISTOR
	R2	QRD161J-222	RESISTOR
	R3	QRD161J-273	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R4	QVZ3518-684AZ	V RESISTOR
	OR	QVZ3518-684	V RESISTOR
	R5	QRD161J-103	RESISTOR
	R6	QRD161J-394	RESISTOR
	R7	ERT-D2FHJ503S	THERMISTOR
	R8	QRD161J-823	RESISTOR
	R9	QRD161J-823	RESISTOR
	R10	QRD161J-223	RESISTOR
	R11	QRD161J-823	RESISTOR
	R21	QRD161J-102	RESISTOR
	R22	QRD161J-155	RESISTOR
	R25	QRD161J-105	RESISTOR
	R26	QRD161J-102	RESISTOR
	R28	QRD161J-222	RESISTOR
	R29	QRD161J-473	RESISTOR
	R30	QRD161J-475	RESISTOR
	R31	QRD161J-103	RESISTOR
	R32	QRD161J-153	RESISTOR
	R33	QRD161J-182	RESISTOR
	R34	QRD161J-273	RESISTOR
	R35	QRD161J-105	RESISTOR
	R36	QRD161J-105	RESISTOR
	R37	QRD161J-105	RESISTOR
	R38	QRD161J-393	RESISTOR
	R39	QRD161J-273	RESISTOR
	R40	QRD161J-105	RESISTOR
	R41	QRD161J-104	RESISTOR
	R43	QRD161J-102	RESISTOR
	R44	QRD161J-104	RESISTOR
	R45	QVZ3518-474AZ	V RESISTOR
	OR	QVZ3523-474AZ	V RESISTOR
	R46	QRD161J-103	RESISTOR
	R56	QRD161J-682	RESISTOR
	R57	QRD161J-102	RESISTOR
	R58	QRD161J-334	RESISTOR
	R61	QRD161J-103	RESISTOR
	R63	QRD161J-153	RESISTOR
	R64	QRD161J-154	RESISTOR
	R65	QRD161J-104	RESISTOR
	R66	QRD161J-824	RESISTOR
	R67	QRD161J-105	RESISTOR
	R68	QRD161J-104	RESISTOR
	R69	QVZ3518-105AZ	V RESISTOR
	OR	QVZ3518-105	V RESISTOR
	R70	QRD161J-274	RESISTOR
	R71	QRD161J-224	RESISTOR
	R72	QVZ3518-105AZ	V RESISTOR
	OR	QVZ3518-105	V RESISTOR
	R73	QRD161J-394	RESISTOR
	R74	QRD161J-124	RESISTOR
	R75	QRD161J-103	RESISTOR
	R76	QRD161J-472	RESISTOR
	R78	QRD161J-472	RESISTOR
	R79	QRD161J-154	RESISTOR
	R80	QRD161J-472	RESISTOR
	R81	QRD161J-393	RESISTOR
	R82	QRD161J-273	RESISTOR
	R83	QRD161J-472	RESISTOR
	R85	QRD161J-123	RESISTOR
	R86	QRD161J-822	RESISTOR
	R90	QRD161J-822	RESISTOR
	R91	QRD161J-103	RESISTOR
	R93	QRD161J-103	RESISTOR
	C1	QFV71HJ-154	M CAPACITOR
	C2	QCC31CK-332	CAPACITOR
	C3	QCVB1CN-103	CAPACITOR
	C21	QCBB1HJ-102	CAPACITOR
	C22	QEK61AM-226	E CAPACITOR
	C23	QEK61AM-226	E CAPACITOR
	C24	QCSB1HJ-150	CAPACITOR
	C26	QCXB1CN-272	CAPACITOR
	C27	QEK61HM-105	E CAPACITOR
	C28	QFV71HJ-153	M CAPACITOR
	C29	QCS31HJ-561	CAPACITOR
	C30	QCBB1HJ-102	CAPACITOR
	C32	QEK61AM-226	E CAPACITOR
	C33	QCC31CK-102	CAPACITOR
	C34	QFL41HJ-122	M CAPACITOR
	C35	QFV71HJ-334	M CAPACITOR
	C36	QEK61EM-475	E CAPACITOR
	C37	QEK61EM-475	E CAPACITOR
	C38	QEK61EM-106	E CAPACITOR
	C39	QEK61EM-106	E CAPACITOR
	C40	QEN61HM-105	NP E CAPACITOR
	C41	QFV71HJ-104	M CAPACITOR
	C42	QCS31HJ-471	CAPACITOR
	C43	QFL41HJ-682	M CAPACITOR
	C44	QEK61HM-105	E CAPACITOR
	C62	QCC31CK-393	CAPACITOR
	C63	QCC31CK-104	CAPACITOR
	C64	QCC31CK-104	CAPACITOR
	C65	QCC31CK-104	CAPACITOR
	C66	QCC31CK-393	CAPACITOR
	C67	QCBB1HJ-101	CAPACITOR
	C68	QCBB1HJ-101	CAPACITOR
	C69	QCBB1HJ-121	CAPACITOR
	C70	QFV71HJ-224	M CAPACITOR
	C71	QCBB1HJ-102	CAPACITOR
	CN1	PU58844-5	CAP HOUSING
	CN2	PU58844-3	CAP HOUSING
	CN3	PU58844-2	CAP HOUSING
	CN4	PU59555-7	CAP HOUSING
	CN5	PU59555-9	CAP HOUSING
	CN6	PU59555-10	CAP HOUSING
	CN7	PU58844-2	CAP HOUSING
	CN8	PU58844-4	CAP HOUSING

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COLOR BOARD ASSEMBLY <45>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10124A	COLOR BOARD ASSY
⚠	IC101	PU22517C	COLOR MODULE ASSY
	IC201	M51646SP	IC
	IC251	BA7007	IC
	IC301	NJM2233AS	IC
	IC302	NJM2233AS	IC
	IC303	M5239L	IC
	Q103	DTC144WS	TRANSISTOR
	Q201	2SC1740S(QRS)	TRANSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	Q212	2SC1740S(QRS)	TRANSISTOR
	Q251	2SC1740S(QRS)	TRANSISTOR
	Q281	2SC1740S(QRS)	TRANSISTOR
	Q282	2SC1740S(QRS)	TRANSISTOR
	Q283	2SC1740S(QRS)	TRANSISTOR
	Q284	2SC1740S(QRS)	TRANSISTOR
	Q285	2SC1740S(QRS)	TRANSISTOR
	Q301	DTC144WS	TRANSISTOR
	Q302	DTC144WS	TRANSISTOR
	D102	MA165	DIODE
		OR 1SS133	DIODE
	D103	MA165	DIODE
		OR 1SS133	DIODE
	D105	MA165	DIODE
		OR 1SS133	DIODE
	D211	MA165	DIODE
		OR 1SS133	DIODE
	D212	MA165	DIODE
		OR 1SS133	DIODE
	D301	MA165	DIODE
		OR 1SS133	DIODE
	D302	MA165	DIODE
		OR 1SS133	DIODE
	D303	MA165	DIODE
		OR 1SS133	DIODE
	D304	MA165	DIODE
		OR 1SS133	DIODE
	R101	QRD161J-102	RESISTOR
	R102	QRD161J-273	RESISTOR
	R112	QRD161J-102	RESISTOR
	R117	QRD161J-222	RESISTOR
	R118	QRD161J-102	RESISTOR
	R119	QRD161J-103	RESISTOR
	R120	QRD161J-102	RESISTOR
	R122	QRD161J-103	RESISTOR
	R123	QRD161J-155	RESISTOR
	R201	QRD161J-102	RESISTOR
	R202	QRD161J-102	RESISTOR
	R203	QRD161J-333	RESISTOR
	R204	QRD161J-393	RESISTOR
	R205	QRD161J-222	RESISTOR
	R206	QRD161J-122	RESISTOR
	R211	QRD161J-102	RESISTOR
	R212	QRD161J-122	RESISTOR
	R213	QRD161J-681	RESISTOR
	R214	QRD161J-121	RESISTOR
	R215	QRD161J-152	RESISTOR
	R216	QRD161J-563	RESISTOR
	R217	QRD161J-103	RESISTOR
	R218	QRD161J-103	RESISTOR
	R219	QRD161J-562	RESISTOR
	R220	QRD161J-102	RESISTOR
	R221	QRD161J-182	RESISTOR
	R222	QRD161J-820	RESISTOR
	R223	QRD161J-561	RESISTOR
	R224	QRD161J-102	RESISTOR
	R225	QRD161J-102	RESISTOR
	R233	QRD161J-222	RESISTOR
	R251	QRD161J-332	RESISTOR
	R252	QRD161J-154	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R253	QRD161J-563	RESISTOR
	R254	QRD161J-182	RESISTOR
	R255	QVZ3521-472	V RESISTOR
	R256	QRD161J-103	RESISTOR
	R257	QRD161J-562	RESISTOR
	R258	QRD161J-333	RESISTOR
	R259	QRD161J-183	RESISTOR
	R260	QRD161J-102	RESISTOR
	R261	QRD161J-393	RESISTOR
	R281	QRD161J-333	RESISTOR
	R282	QRD161J-273	RESISTOR
	R283	QRD161J-222	RESISTOR
	R284	QRD161J-152	RESISTOR
	R285	QRD161J-272	RESISTOR
	R286	QRD161J-181	RESISTOR
	R287	QRD161J-473	RESISTOR
	R288	QRD161J-102	RESISTOR
	R289	QRD161J-102	RESISTOR
	R301	QRD161J-332	RESISTOR
	R302	QRD161J-223	RESISTOR
	R303	QRD161J-153	RESISTOR
	R304	QRD161J-123	RESISTOR
	R305	QRD161J-153	RESISTOR
	R306	QRD161J-393	RESISTOR
	R307	QRD161J-103	RESISTOR
	C103	QEK60JM-337	E CAPACITOR
	C104	QEK61EM-475	E CAPACITOR
	C105	QEK61HM-104	E CAPACITOR
	C106	QCFB1EZ-223	CAPACITOR
	C107	QCVB1CN-103	CAPACITOR
	C108	QEK61HM-224	E CAPACITOR
	C114	QCFB1EZ-223	CAPACITOR
	C117	QETC0JM-337	E CAPACITOR
	C118	QETC1EM-335	E CAPACITOR
	C120	QCC11EJ-473	CAPACITOR
	C121	QETC1HM-474	E CAPACITOR
	C122	QCSB1HJ-680	CAPACITOR
	C123	QCBB1HJ-820	CAPACITOR
	C201	QETC0JM-476	E CAPACITOR
	C202	QCVB1CN-103	CAPACITOR
	C203	QCVB1CN-103	CAPACITOR
	C204	QCSB1HJ-330	CAPACITOR
	C205	QCBB1HJ-121	CAPACITOR
	C211	QCVB1CN-103	CAPACITOR
	C212	QCVB1CN-103	CAPACITOR
	C213	QCVB1CN-103	CAPACITOR
	C214	QCVB1CN-103	CAPACITOR
	C215	QEK61CM-106	E CAPACITOR
	C216	QCVB1CN-103	CAPACITOR
	C217	QEK61AM-226	E CAPACITOR
	C219	QFN31HJ-273	M CAPACITOR
	C220	QCVB1CN-103	CAPACITOR
	C221	QCVB1CN-103	CAPACITOR
	C222	QEK61EM-475	E CAPACITOR
	C223	QEK60JM-107	E CAPACITOR
	C224	QCVB1CN-103	CAPACITOR
	C225	QCVB1CN-103	CAPACITOR
	C226	QCVB1CN-103	CAPACITOR
	C227	QEK61CM-106	E CAPACITOR
	C228	QFN41HJ-104	M CAPACITOR
	C229	QCVB1CN-103	CAPACITOR
	C230	QCVB1CN-103	CAPACITOR
	C231	QCVB1CN-103	CAPACITOR
	C234	QCVB1CN-103	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C251	QETC1CM-476	E CAPACITOR
	C252	QCVB1CN-103	CAPACITOR
	C253	QETC1AM-336	E CAPACITOR
	C254	QFN31HJ-152	M CAPACITOR
	C255	QFN31HJ-272	M CAPACITOR
	C256	QFN31HJ-223	M CAPACITOR
	C257	QETC1CM-106	E CAPACITOR
	C258	QCVB1CN-103	CAPACITOR
	C281	QCVB1CN-103	CAPACITOR
	C282	QCVB1CN-103	CAPACITOR
	C301	QETC0JM-476	E CAPACITOR
	C302	QCVB1CN-103	CAPACITOR
	C303	QCVB1CN-103	CAPACITOR
	C304	QCVB1CN-103	CAPACITOR
	C305	QCVB1CN-103	CAPACITOR
	C306	QCVB1CN-103	CAPACITOR
	L101	PU59153-101K	INDUCTOR
	L102	PU60165-150G	COIL
	L103	PU48530-222J	PEAKING COIL
	L201	PU48530-101K	PEAKING COIL
	L202	PU59152-390J	PEAKING COIL
	L211	PU60220	COIL
	L212	PU60221	COIL
	L213	PU48530-101K	PEAKING COIL
	L214	PU59152-121J	PEAKING COIL
	L251	PU49057	LC BLOCK
	L252	PU48530-101K	PEAKING COIL
	L253	PU47051-562	COIL
	L301	PU48530-101K	PEAKING COIL
	L302	PU48530-101K	PEAKING COIL
	EQ101	PU53501-11	EQUALIZER
	OR	PU53501-6	EQUALIZER
	EQ102	PU60681	EQUALIZER
	EQ201	PU53501-5	EQUALIZER
	LPF101	PU58022	LOW PASS FILTER
	BPF101	PU57399-3	BAND PASS FILTER
	OR	PU57399-2	BAND PASS FILTER
	BPF201	PU54437-2	BAND PASS FILTER
	BPF202	PU54420-2	BAND PASS FILTER
	BPF203	PU54421-2	BAND PASS FILTER
	CF251	PU56983	CERAMIC FILTER
	DL101	PU60322-2	DELAY LINE
⚠	X101	PU60059	CRYSTAL RESONATOR
	T101	PU60057-3	TANK FILTER
	OR	PU60057-2	TANK FILTER
	CN101	PU59555-107	CAP HOUSING
	CN201	PU58844-109	CAP HOUSING
	CN202	PU58844-106	CAP HOUSING
	CN203	PU58844-102	CAP HOUSING

DECK TERMINAL BOARD ASSEMBLY <51><53>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PU22509C-01	DECK TERMINAL BOARD ASSY
			-DECK TERMINAL BOARD SECTION <51>-
	PWBA1	PU22509A1-01	DECK TERMINAL BOARD ASSY
	R1	QRD181J-151	RESISTOR
	R3	QRD181J-331	RESISTOR
	PS1	PU60271	PHOTO INTERRUPTER
	WR1	PW30110-26DD885	PARALLEL WIRE,CN1
	CN1	PU59933-15	WIRE TRAP
			-REC SAFETY BOARD SECTION <53>-
	PWBA3	PU22509A3	REC SAFETY BOARD ASSY
	SW	PU58644-1-3	REC SAFETY SWITCH

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RELAY BOARD ASSEMBLY <52>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA2	PU22509C2	RELAY BOARD ASSY
	LC1	PU59809-222T	N FILTER
	LC2	PU59809-222T	N FILTER
	WR2	PW30113-G0ABZ62	PARALLEL WIRE

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END SENSOR BOARD ASSEMBLY <54>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA4	PU22509A4	END SENSOR BOARD ASSY
	Q1	PN268R-NC	PHOTO TRANSISTOR
	CN1	PU59945-102	WIRE SOCKET

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CASSETTE HOUSING BOARD <56>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWB1	PB30043	CASSETTE HOUSING BOARD
	Q1	PN268R-NC	PHOTO TRANSISTOR
	R1	QRD161J-471	RESISTOR
	PHS1	PU58879	PHOTO INTERRUPTER
	CN1	PU58844-106	CAP HOUSING

JUMP DETECTOR BOARD ASSEMBLY <70>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB30081A1	JUMP DET BOARD ASSY
	IC401	BA7023L	IC
	IC402	BU4030B	IC
	IC403	BA222	IC
	IC404	TC4013BP	IC
	Q401	2SA1309R,S	TRANSISTOR
	OR	2SA933S(RS)	TRANSISTOR
	Q611	DTC124ES	TRANSISTOR
	D411	1SS133	DIODE
	OR	MA165	DIODE
	D611	1SS133	DIODE
	OR	MA165	DIODE
	D612	1SS133	DIODE
	OR	MA165	DIODE
	D613	1SS133	DIODE
	OR	MA165	DIODE
	D614	1SS133	DIODE
	OR	MA165	DIODE
	D617	1SS133	DIODE
	OR	MA165	DIODE
	R401	QRD161J-222	RESISTOR
	R402	QRD161J-391	RESISTOR
	R403	QRD161J-223	RESISTOR
	R404	QRD161J-472	RESISTOR
	R405	QRD161J-124	RESISTOR
	R406	QRD161J-184	RESISTOR
	R407	QRD161J-683	RESISTOR
	R408	QRD161J-153	RESISTOR
	R409	QRD161J-105	RESISTOR
	R410	QVZ3521-473	V RESISTOR
	R411	QRD161J-105	RESISTOR
	R412	QRD161J-473	RESISTOR
	R413	QRD161J-104	RESISTOR
	R414	QRD161J-223	RESISTOR
	R633	QRD161J-103	RESISTOR
	R643	QRD161J-222	RESISTOR
	R644	QRD161J-222	RESISTOR
	R645	QRD161J-103	RESISTOR
	C401	QFN31HJ-152	M CAPACITOR
	C402	QETC1HM-105	E CAPACITOR
	C403	QFN31HJ-222	M CAPACITOR
	C404	QFN31HJ-332	M CAPACITOR
	C405	QETC1CM-106	E CAPACITOR
	C406	QETC0JM-107	E CAPACITOR
	C407	QCVB1CN-103	CAPACITOR
	C408	QFN31HJ-103	M CAPACITOR
	C409	QFN31HJ-273	M CAPACITOR
	C410	QETC1HM-105	E CAPACITOR
	C411	QCBB1HJ-331	CAPACITOR
	C412	QETC1HM-105	E CAPACITOR
	C413	QFN31HJ-103	M CAPACITOR
	C414	QCVB1CN-103	CAPACITOR
	C415	QFN31HJ-273	M CAPACITOR
	C416	QCVB1CN-103	CAPACITOR
	C417	QETC1AM-476	E CAPACITOR
	L401	PU48530-101K	PEAKING COIL
	L402	PU48530-101K	PEAKING COIL

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
	R512	NRSA63J-103N	RESISTOR
	C501	NCS31HJ-101A	CAPACITOR
	C502	NCB31CK-223A	CAPACITOR
	C505	QCT05CH-120	C CAPACITOR

— IF SUB (2) <72> —

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
	PWBA	PB20366A2-03	TU IF SUB BOARD ASSEMBLY
	Q401	DTC144EU	TRANSISTOR
	Q402	DTC123EU	CHIP DEGI TR.
	Q403	DTC123EU	CHIP DEGI TR.
	Q404	2SD1819A(RS)	TRANSISTOR
	D401	MA151WA	DIODE
	R401	QRSA08J-104YN	RESISTOR
	C401	QCSA1HJ-471	CAPACITOR
	C402	QCYA1HK-103	CAPACITOR
	C403	QCYA1HK-103	CAPACITOR

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TUNER CONTROL BOARD ASSEMBLY <08>

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
	PWBA	PB20208A1-03	TUNER CONTROL BOARD ASSEMBLY
⚠	TNR1	PU36421-3-2	UHF/VHF TUNER
⚠	IC201	LA7910	IC
	IC202	M5223P	IC
	Q201	2SB810H,J	TRANSISTOR
	Q202	DTC144ES	TRANSISTOR
	or	UN4213	TRANSISTOR
	or	2SC3399	TRANSISTOR
	Q204	2SC3311A(S)	TRANSISTOR
	Q205	2SA720	TRANSISTOR
	or	2SB1278(QR)	TRANSISTOR
	Q206	2SC1740S(S)	TRANSISTOR
	or	2SC3311A(S)	TRANSISTOR
	Q210	DTA114ES	TRANSISTOR
	Q211	DTC144ES	TRANSISTOR
	Q215	2SD1450S,T	TRANSISTOR
	Q216	DTC144ES	TRANSISTOR
	Q217	DTC144ES	TRANSISTOR
⚠	Q218	DTA144ES	TRANSISTOR
	Q220	2SC3068	TRANSISTOR
	D201	LTZ-MR15	ZENER DIODE
	D202	HZT33-02	ZENER DIODE
	D203	1SS133	DIODE
	D210	1SS133	DIODE
	R201	QRD161J-182	RESISTOR
	R202	QRD161J-153	RESISTOR
	R206	QRD161J-332	RESISTOR
	R208	QRD161J-121	RESISTOR
	R209	QRD161J-473	RESISTOR
	R210	QRD161J-103	RESISTOR
	R211	QRD161J-103	RESISTOR
	R212	QRD161J-333	RESISTOR
	R214	QRD161J-394	RESISTOR
	R215	QRD161J-154	RESISTOR
	R216	QRD161J-154	RESISTOR
	R217	QRD161J-154	RESISTOR
	R218	QRD161J-103	RESISTOR
	R225	QRD161J-472	RESISTOR
	R226	QRD161J-472	RESISTOR
	R227	QRD161J-104	RESISTOR
	R228	QRD161J-472	RESISTOR
	R235	QRD161J-472	RESISTOR
	R236	QRD161J-472	RESISTOR
	R237	QRD161J-123	RESISTOR
	R238	QRD161J-123	RESISTOR
	R262	QRD161J-103	RESISTOR
	R263	QRD161J-103	RESISTOR
	R271	QRD161J-473	RESISTOR
	R273	QRD161J-222	RESISTOR
	R277	QRD161J-222	RESISTOR
	R280	QRD161J-471	RESISTOR
	R281	QRD163J-394	RESISTOR
	R282	QRD161J-103	RESISTOR
	R285	QRD161J-223	RESISTOR
	C202	QETC1CM-106	E CAPACITOR
	C204	QCBB1HJ-101	CAPACITOR
	C205	QETC1HM-106	E CAPACITOR
	C207	QCVB1CM-103	CAPACITOR
	C208	QFV71HJ-333	TF CAPACITOR
	C209	QFV71HJ-153	TF CAPACITOR
	C210	QFV71HJ-333	TF CAPACITOR
	C211	QFV71HJ-153	TF CAPACITOR
	C215	QETC1CM-106	E CAPACITOR
	C216	QETC1HM-105	E CAPACITOR
	C217	QETC1CM-106	E CAPACITOR
	C218	QETC1EM-335	E CAPACITOR
	C219	QETC1CM-106	E CAPACITOR
	C221	QETC1CM-106	E CAPACITOR
	C222	QETC1CM-106	E CAPACITOR
	C223	QEK61CM-476	E CAPACITOR
	C224	QEK61HM-224	E CAPACITOR
	C230	QEK41CM-336	E CAPACITOR
	L204	PU59152-6R8K	PEAKING COIL
⚠	TH201	PU52108-2R2	POSITIVE THERMISTOR
	HD1	PU36378	HOLDER
⚠	CP201	ICP-F10	CIRCUIT PROTECTOR
	CN201	PU59555-8	CAP HOUSING
	CN202	PU58844-4	CAP HOUSING

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TUNER CTL SUB BOARD ASSEMBLY <46>

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
	PWBA	PB10232A-05	TUNER CTL SUB BOARD ASSEMBLY
	IC301	LA1150N	IC
	Q301	2SC3936(BC)	TRANSISTOR
	Q302	2SC3936(BC)	TRANSISTOR
	Q303	2SC2480(S)	TRANSISTOR
	Q304	2SC2480(S)	TRANSISTOR
	Q305	2SC4081(RS)	TRANSISTOR
	Q310	DTC144EU	TRANSISTOR
	D311	DAN202U	DIODE
	R301	NRSA63J-750N	RESISTOR
	R302	NRSA63J-183N	RESISTOR
	R303	NRSA63J-332N	RESISTOR
	R304	NRSA63J-331N	RESISTOR
	R305	NRSA63J-221N	RESISTOR
	R306	NRSA63J-271N	RESISTOR
	R307	NRSA63J-221N	RESISTOR
	R308	NRSA63J-511N	RESISTOR
	R309	NRSA63J-183N	RESISTOR
	R310	NRSA63J-103N	RESISTOR
⚠	R311	NRSA63J-221N	RESISTOR
	R312	NRSA63J-102N	RESISTOR
	R313	NRSA63J-473N	RESISTOR
	R314	NRSA63J-473N	RESISTOR
	R315	NRSA63J-103N	RESISTOR
	R316	NRSA63J-103N	RESISTOR
	R317	NRSA63J-241N	RESISTOR
	R318	NRSA63J-471N	RESISTOR
	R319	NRSA63J-472N	RESISTOR
	R320	NRSA63J-223N	RESISTOR
	R321	NRSA63J-104N	RESISTOR
	R322	NRSA63J-103N	RESISTOR
	R325	NRSA63J-334N	RESISTOR
	R326	NRSA63J-334N	RESISTOR
	C301	QCYA1HK-222	CAPACITOR
	C302	QCYA1HK-222	CAPACITOR
	C303	QCYA1HK-222	CAPACITOR
	C304	QCTA1CH-2R0	CAPACITOR
	C305	QCTA1CH-2R0	CAPACITOR
	C306	QCYA1HK-222	CAPACITOR
	C307	QCYA1HK-222	CAPACITOR
	C308	NCT08CH-100A	CAPACITOR
	C309	QAT3120-7R0	TRIMMER CAPACITOR
	C310	QCFA1HZ-473	CAPACITOR
	C311	QCFA1HZ-473	CAPACITOR
	C312	QCTA1CH-100	CAPACITOR
	C313	QCFA1HZ-473	CAPACITOR
	C314	QEK60JM-226	E CAPACITOR
	C315	QEK61EM-475	E CAPACITOR
	CF301	PU58558-4	CERAMIC FILTER
	or	PU60774-4	CERAMIC FILTER
	CF302	PU58558-3	CERAMIC FILTER
	or	PU60774-3	CERAMIC FILTER
	CF303	PU32989-3	CERAMIC FILTER
	CF304	PU32989-3	CERAMIC FILTER
	T301	PU60948	IF.TRANSFORMER, TRAPE
	T302	PU60949	IF.TRANSFORMER, S.DET
	BKT1	PU60923	BRACKET
	SLD1	PU60924	SHIELD CASE
	SLD2	PU60925	SHIELD PLATE
	TML1	PU59935-8	TERMINAL
	TP301	PU45908	TEST PIN, X4,(301-304)

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TUNER UNIT ASSEMBLY PU36432G-10

PART No.	PART NAME, DESCRIPTION
PB10112A-10	IF BOARD ASSEMBLY <07>
PB20208A1-03	TUNER CTL BOARD ASSEMBLY <08>
PB10232A-05	TUNER CTL SUB BOARD ASSEMBLY <46>